Tenda

User Guide

Wireless N PCI-E Adapter User Guide

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About this User Guide

This user guide applies to W311E (150Mbps) and W322E (300Mbps). The W311E is used as an example throughout this user guide for illustration.

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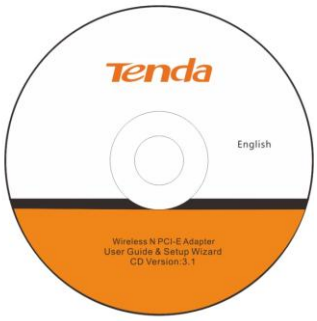
Chapter 1 Product Overview

This Tenda Wireless N PCI-E adapter delivers enhanced wireless performance over a standard PCI interface for your PCI Express-enabled desktop computer. Based on wireless n technology, this adapter delivers faster wireless speed and 3x farther range than wireless G. Plus, it comes with Wi-Fi Protected Setup™ (WPS) for easy connection to a wireless network. Once connected, you can share a high-speed Internet connection, photos, files, music, videos, printers, and storage.

1.1 Package Contents (For references only)

W311E



W322E

1.2 LED Overview

The adapter comes with a status LED, which displays：

A solid green light while identified and functioning properly;

1.3 Key Features

- Automatically sense network and adjust transmission rate;
- 20/40M bandwidth auto-select;
- Up to 150 Mbps(W311E)/300Mbps(W322E) wireless speed over 2.4Ghz;
- Comes with 2 operating modes: Infrastructure and Ad-Hoc;
- Access secure networks using WEP, WPA or WPA2;
- Wi-Fi Protected Setup™ (WPS) for easy connection to a wireless network;
- Compatible with Windows XP, Vista, Windows7, Windows8 and more;

1.4 Applications

The Tenda adapter delivers powerful, fast and reliable wireless access to your desktop or notebook computer. It is ideal for use by or in:

a). ancient buildings, places rented or for temporary use where wiring is such a big mess, a huge cost or hard to reach;

b). business or individual always in need of network topology changes;

c). business or individual who wants to have a wireless network established fast and simple without the mess of wiring.

Note：This PCI-E adapter can only be installed in a PCI-E slot on a desktop.

1.5 Before Getting Started

1. Before installing and using this product, please peruse the entire user guide.

2. Also, if you have previously installed a different manufacturer's adapter or

a different model Tenda adapter, make sure the software and driver are uninstalled before installing the new software. Some utilities may cause a conflict with the new software.

1.6 Maintenance

Observe the following to ensure the product continuously stays in good condition.

1. Keep the device in a dry and well ventilated environment

2. DO NOT expose the device to corrosive substances (such as acid and alkali, etc)

3. DO NOT expose the device to sun shine or other heat sources;

4. If you run into a problem that you cannot solve, go to www.tendacn.com to find a solution or email your problem to: support@tenda.com.cn or support02@tenda.com.cn.

Chapter 2 Installation Guide

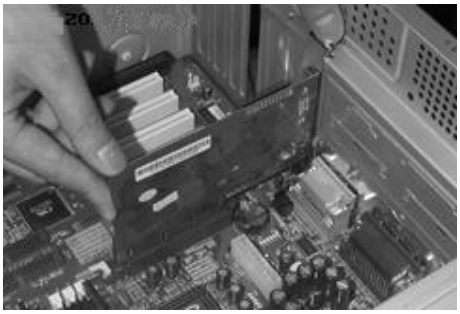
The CD that comes in the package includes both driver and software, which can be installed automatically. This section will walk you through the installation process.

Software install and operation instructions are illustrated in Windows® XP. If you have a different operating system, the screenshots on your computer will look similar to the following examples.

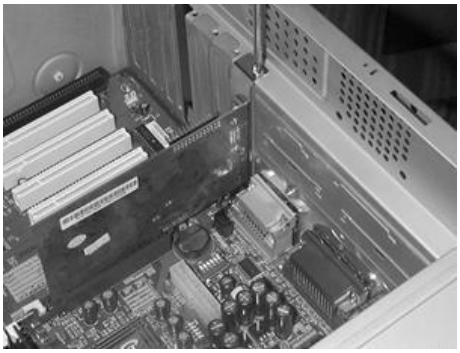
2.1 Hardware Install

1. Turn off your computer and open the case.

2. Insert the NIC into an available PCI-E slot.



3. Fix the NIC with screws and cover the case.



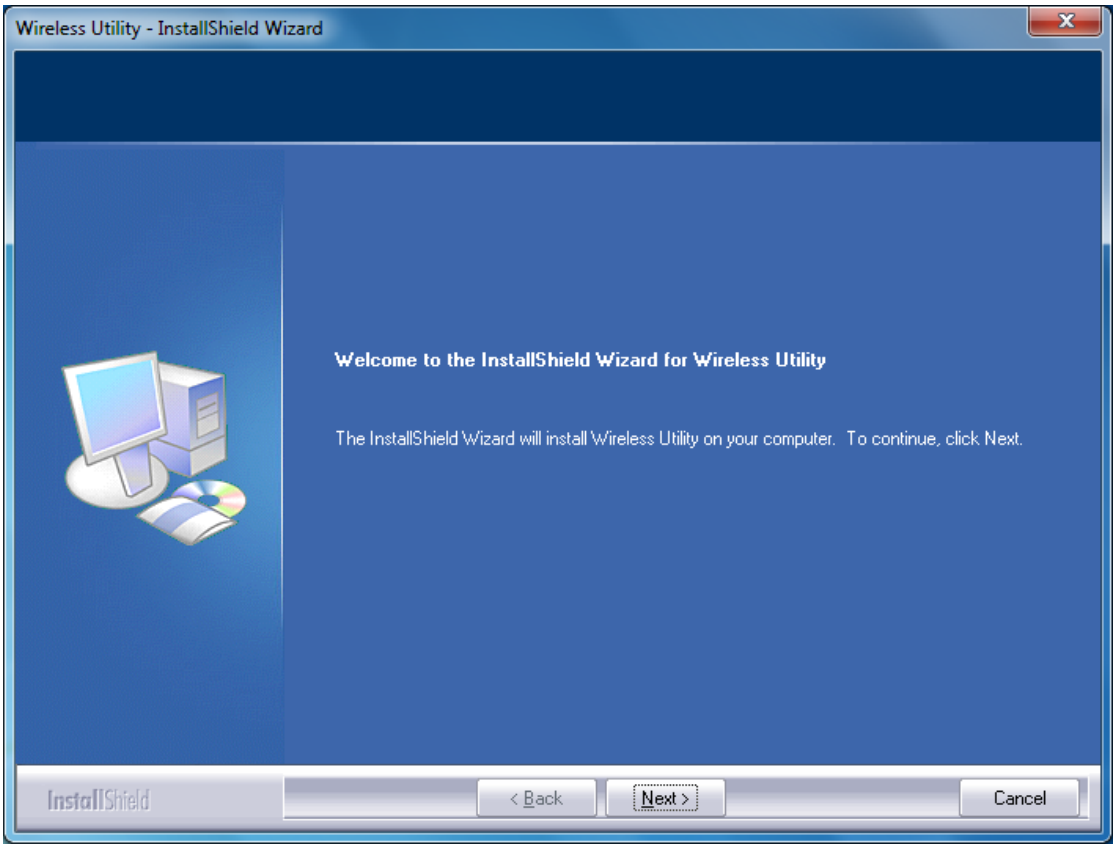
4. Connect the NIC to your existing network using a Cat5 or Cat5e Ethernet cable.

2.2 Software Install

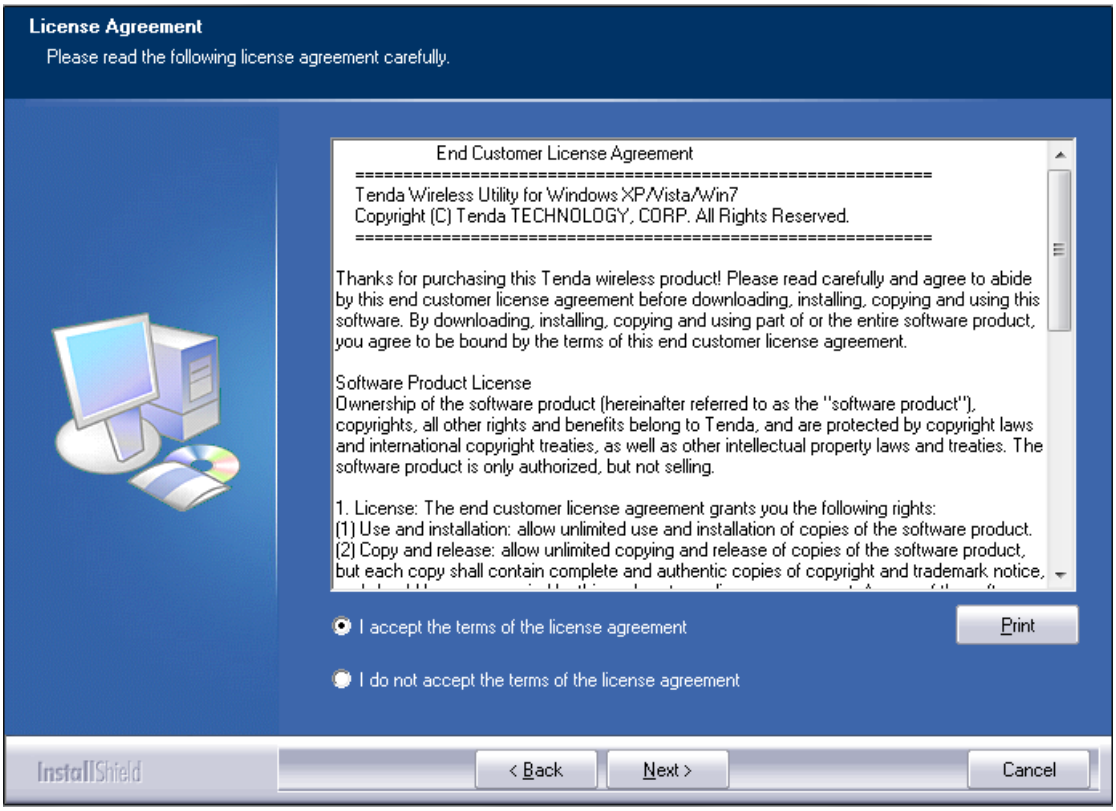
1. If the Found New Hardware Wizard appears, click Cancel and then use the quick install CD to install the driver and software.

2. Insert the Tenda Driver CD in your PC's CD-ROM drive.If the CD Autorun function does not automatically start on your computer, double click **Tenda.exe**. When the autorun screen appears, click **Run**.

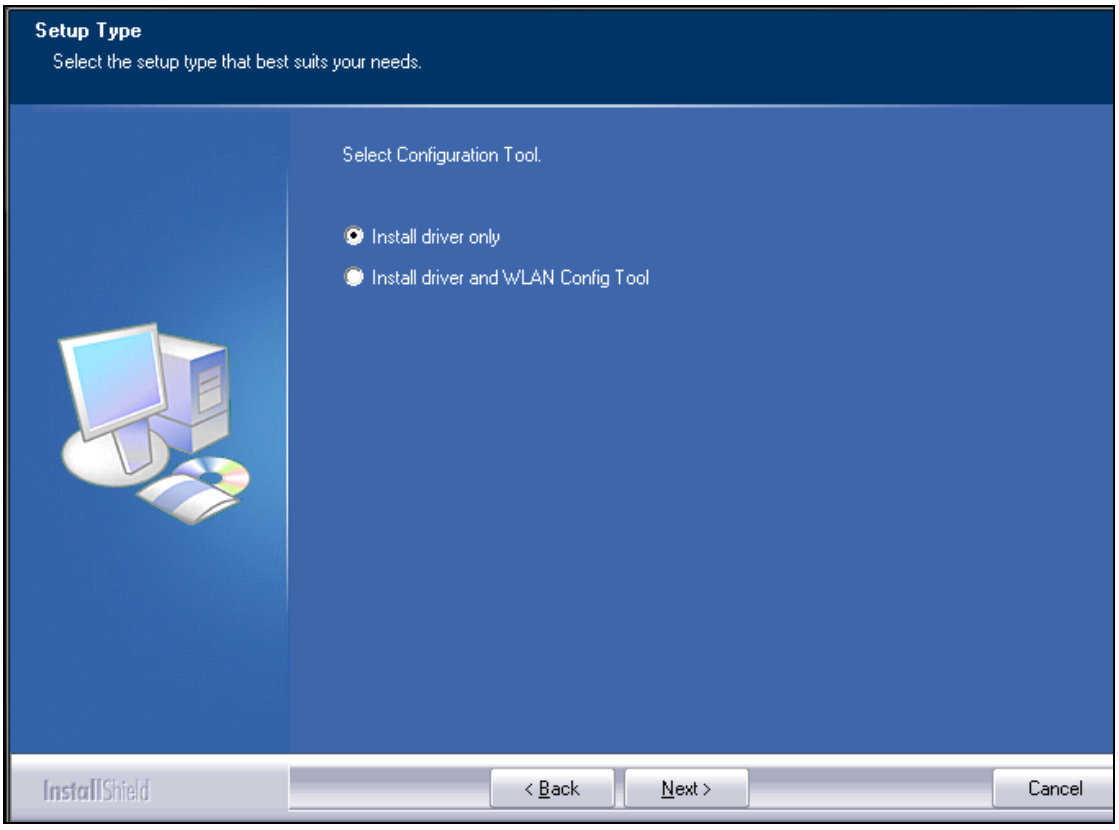
3. Click **Next** to continue.



4. Check **I accept the terms of the license agreement** and then click **Next**.

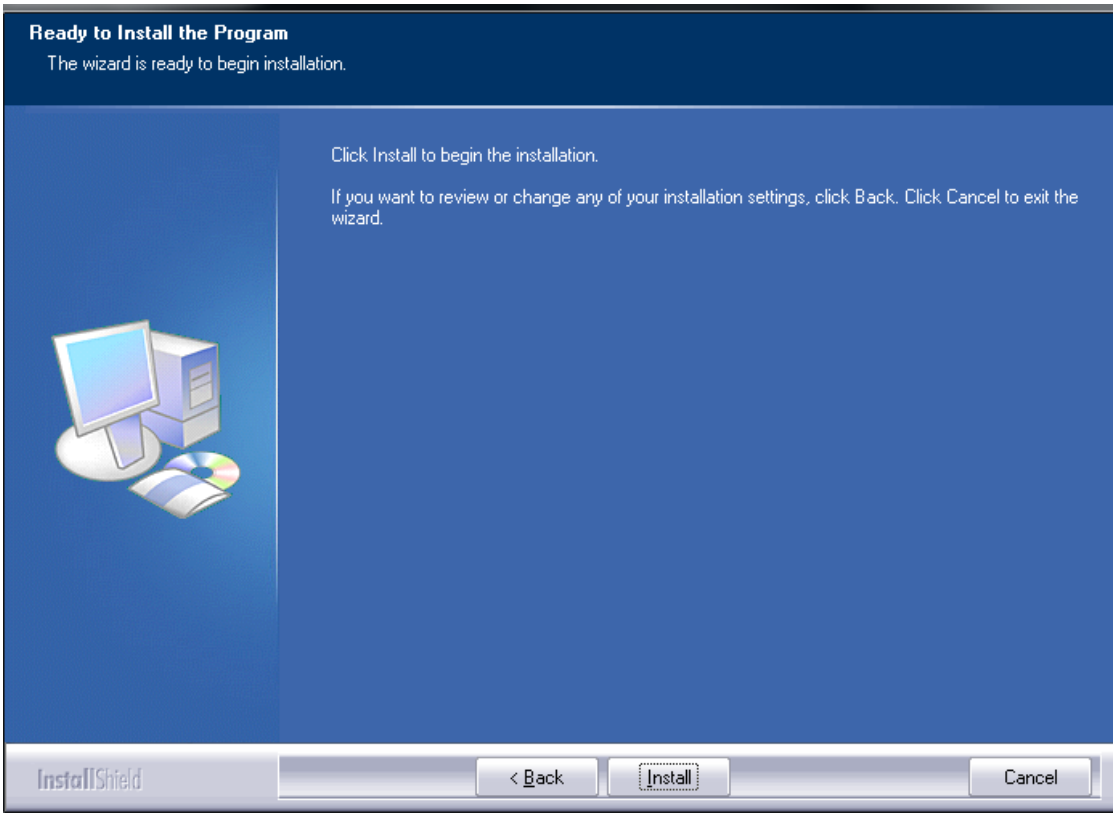


5. You can either install the standalone driver without Tenda adapter utility or install both driver and Tenda adapter utility.

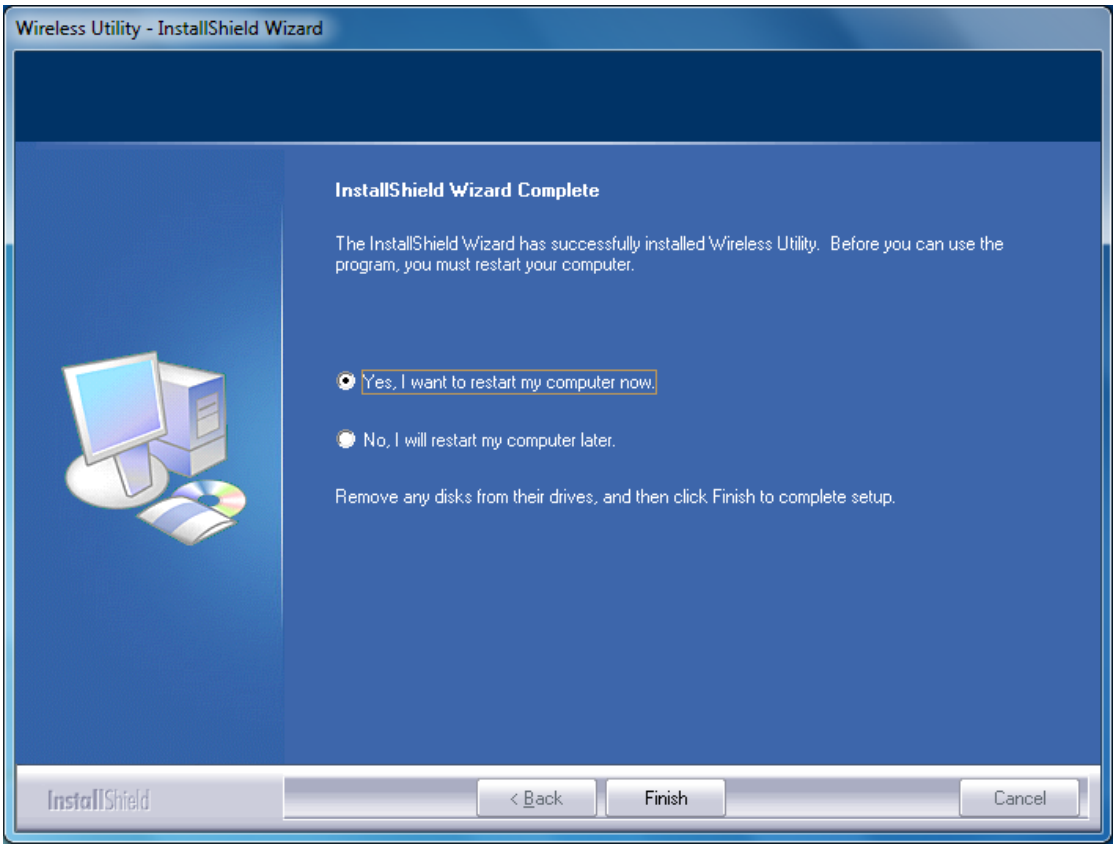


Note: If you wish to use Windows system built-in wireless utility, you can select the first installation mode; however, if you want to use advanced features like WPS, you must also install the Tenda adapter utility.

6. Click **Install** to install the driver.



7. Wait till the driver is completely auto-installed and then click **Finish** to exit.



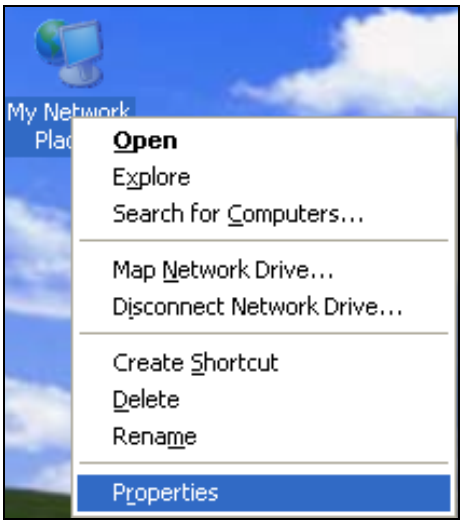
Chapter 3 Use System Built-in Wireless Utility

This section will walk you through the configuration process of connecting to a wireless network using your PC's OS built-in wireless utility.

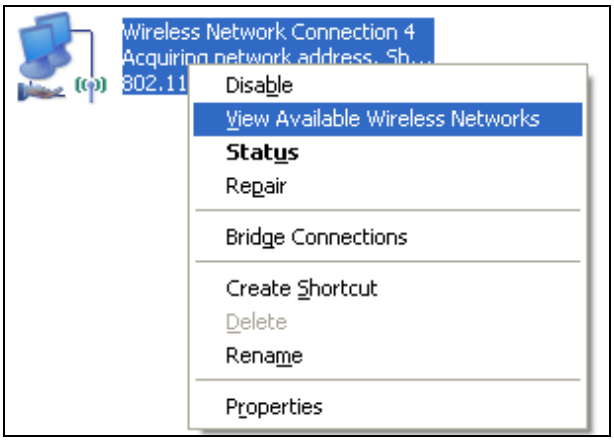
To use Windows XP built-in wireless utility, you must first enable the **Wireless Zero Configuration** service (enabled by default).

3.1 Join a Wireless Network --Windows® XP

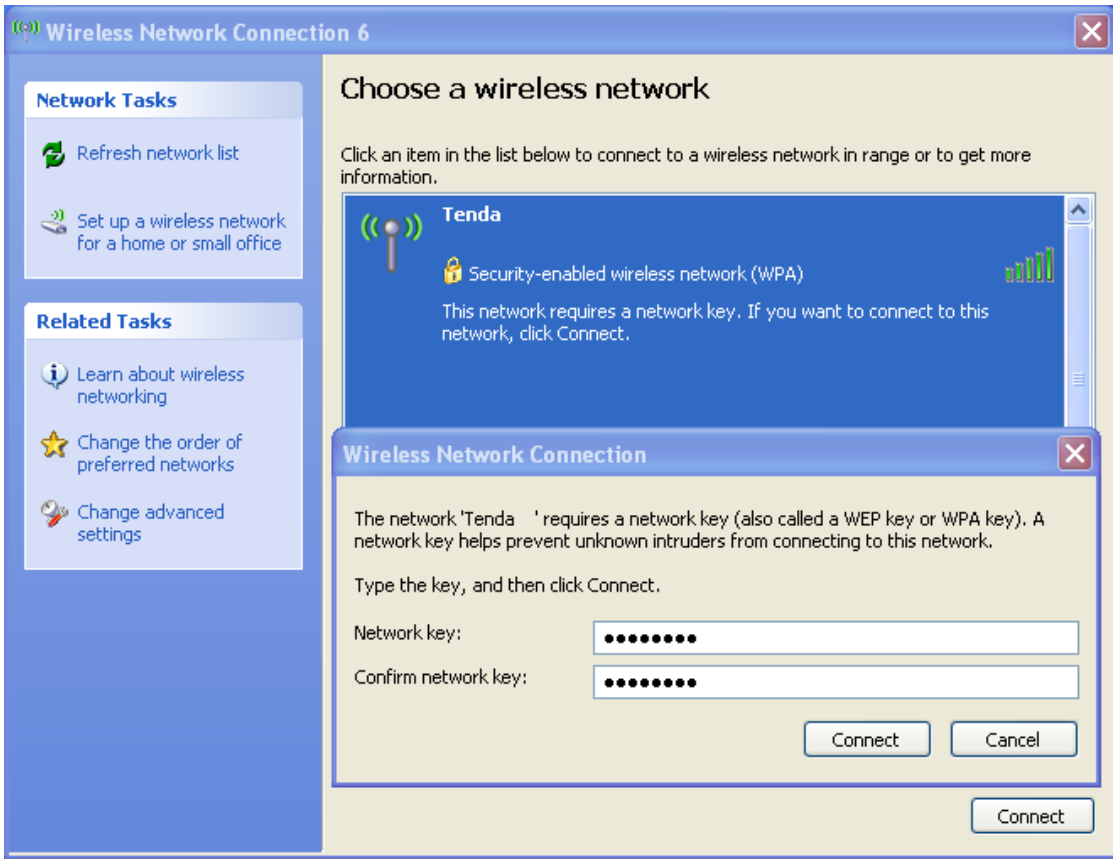
1. Right-click **My Network Places** from the desktop and select **Properties**.



2. As seen below, Wireless Network Connection displays Not Connected. Right click **Wireless Network Connection** and select **View Available Wireless Networks**.

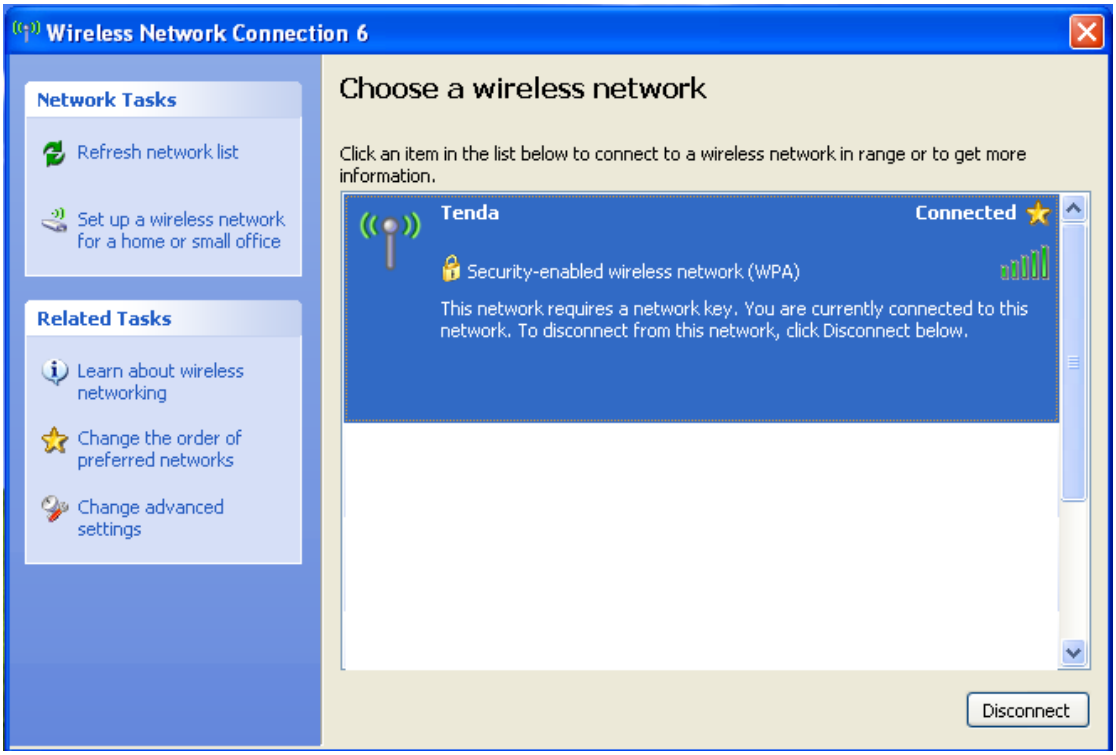


3. The utility will display any available wireless networks in your area. If you don't see the network you wish to connect to, click the **Refresh** network list. Click on the network (SSID) you wish to connect to and click the **Connect** button or directly double click it. If you are prompted to provide a security key, simply enter it (case sensitive) exactly as it is on your wireless router or access point and then click **Connect**.



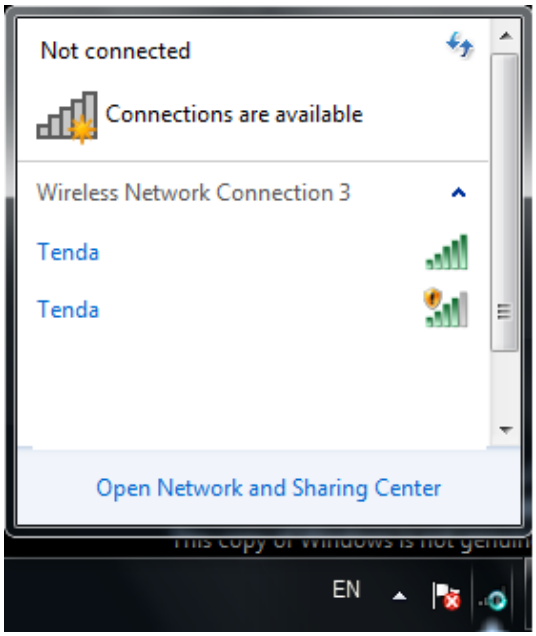
Note: If the network you selected is not encrypted, you will not see this dialog box requesting a security key.

4. When this screen appears, you have successfully connected to your wireless network and can start surfing Internet.

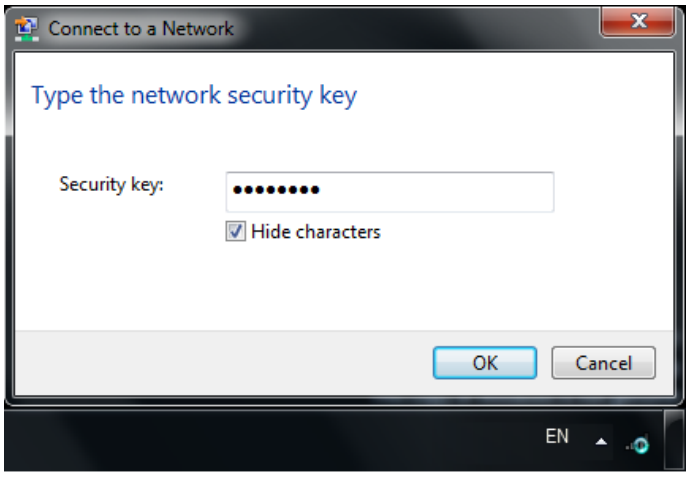


3.2 Join a Wireless Network --Windows® 7

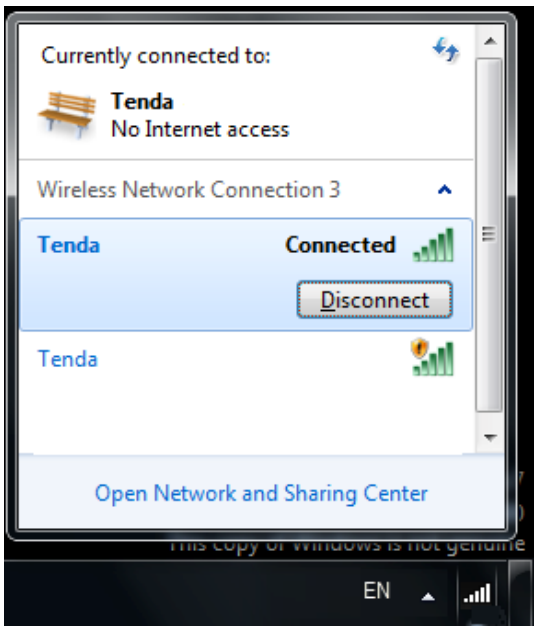
1. Click the wireless icon in your system tray (lower-right corner). The utility will display any available wireless networks in your area. Click on a network (SSID) and click the **Connect** button or directly double-click it. If you don't find the desired wireless network, click the refresh icon (upper-right corner) to update the list.



2. If you are prompted to provide a security key, simply enter it exactly as it is on your wireless router or access point and then click **OK**.



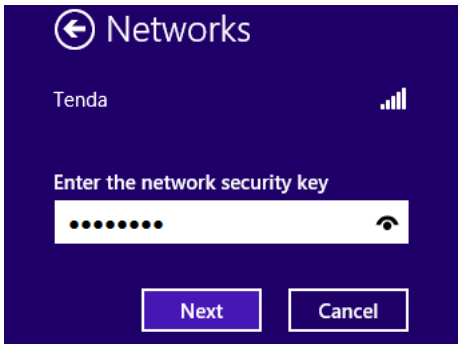
3. When **Connected** appears next to the selected wireless network (SSID), you have successfully connected to it. To disconnect from it, view status, or change wireless properties, etc, simply right-click the SSID.



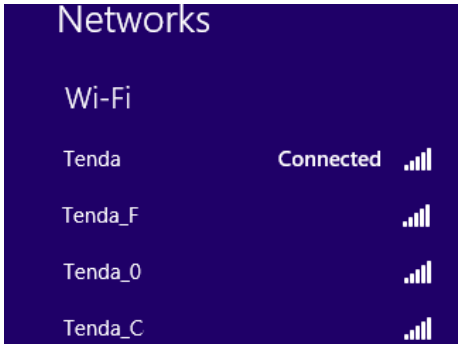
3.3 Join a Wireless Network --Windows® 8

1. Click the wireless icon in your system tray (lower-right corner). The utility will display any available wireless networks in your area. Click on a network (SSID) and click the **Connect** button or directly double-click it.

2. If you are prompted to provide a security key, simply enter it exactly as it is on your wireless router or access point and then click **Next**.



3. When **Connected** appears next to the selected wireless network (SSID), you have successfully connected to it.



⚠ **Note:**

If the wireless router or AP you connect to via the wireless adapter does not have Internet access, then you will get a Restricted status and a yellow exclamation mark will appear in the wireless icon in your system tray (lower-right corner).

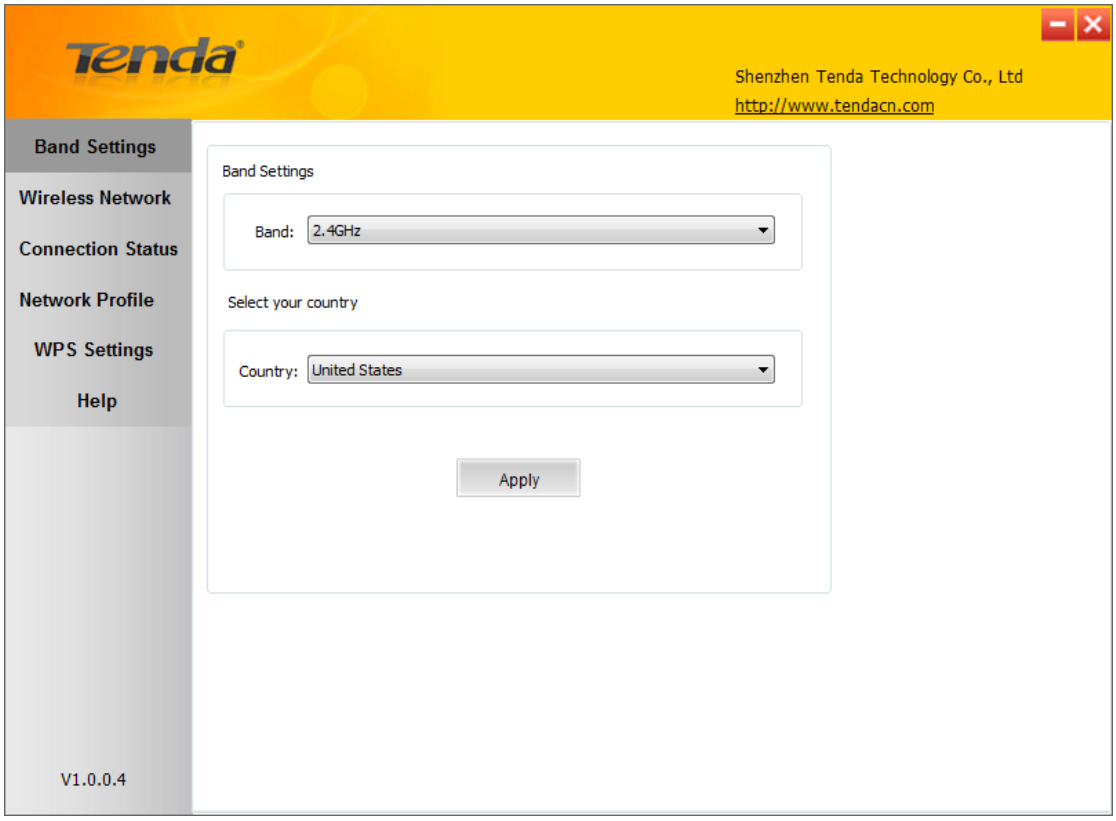
Chapter 4 Tenda UI Guide

If you select install both driver and Tenda adapter utility, .then both of them will be installed on your PC. All features on the adapter can be configured and implemented through the Tenda adapter utility (abbreviated to UI).

To start the Tenda UI, select **Start**-> **Tenda-> Wireless Utility** or directly click **Wireless Utility** shortcut from your desktop.

4.1 Frequency Band Setup

This PCI-E wireless adapter operates on 2.4Ghz band only and may need to operate on different channels depending on your country.

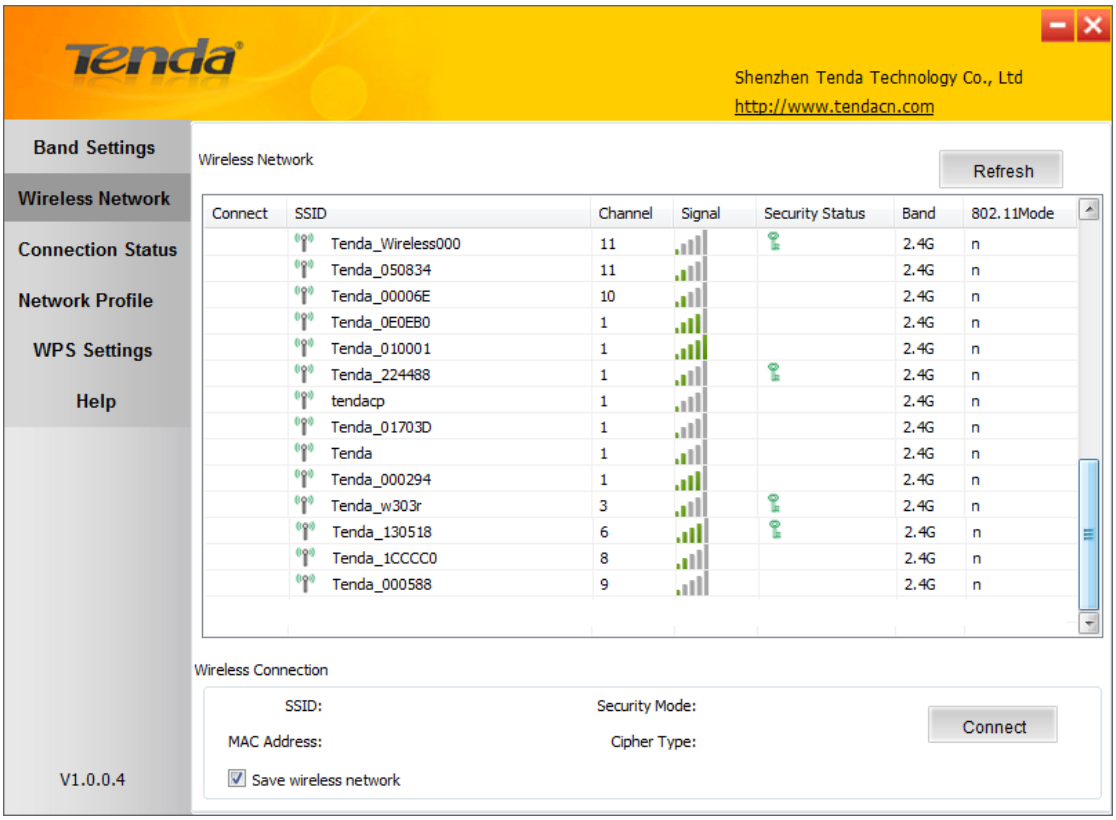


4.2 Wireless Network

Wireless network displays all available wireless networks in the area and lets you see at a glance MAC address, channel, network mode, signal strength, authentication mode, encryption mode and/or WPS authentication of each AP. Also, you can select to connect to the desired wireless network.

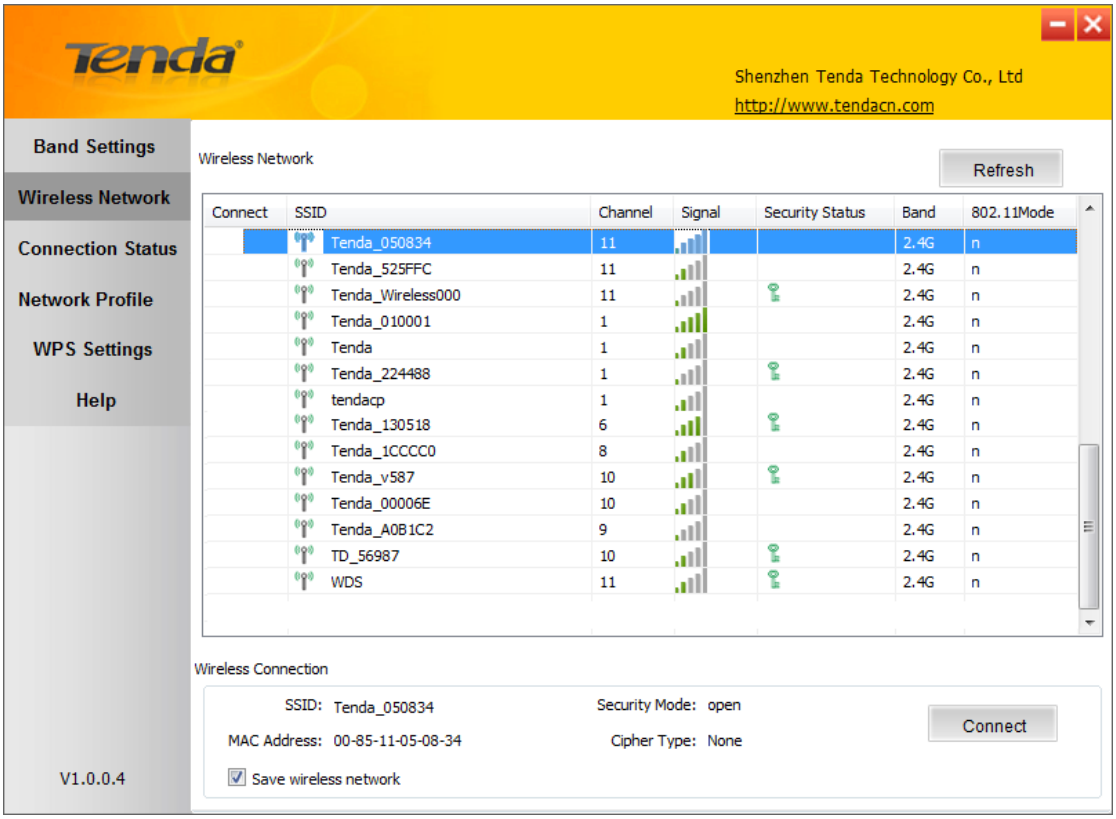
Before connecting to a wireless network, click **Refresh** to update the available wireless network list, select a desired wireless network and then click

Connect.



To join an unsecured network, simply click **Connect**.

When joining a secured network, you will be prompted to provide a security key. Simply enter it exactly as it is on the wireless router or access point you wish to join and then click **Next**.



Note: If you check “**Save wireless network"**, then, after the adapter connects to the network, it automatically saves the network connection information to a profile.

For detailed illustrations of authentication and encryption modes, see below:

WEP: Support 10 or 26 Hex characters; 5 or 13 ASCII characters.

WPA-PSK: Support 8~63ASCII characters; 8~64Hex characters.

WPA2-PSK: Support 8~63 ASCII characters; 8~64 Hex characters.

⚠ **Note:** Hex characters include numbers of 0~9 and letters of a~f.

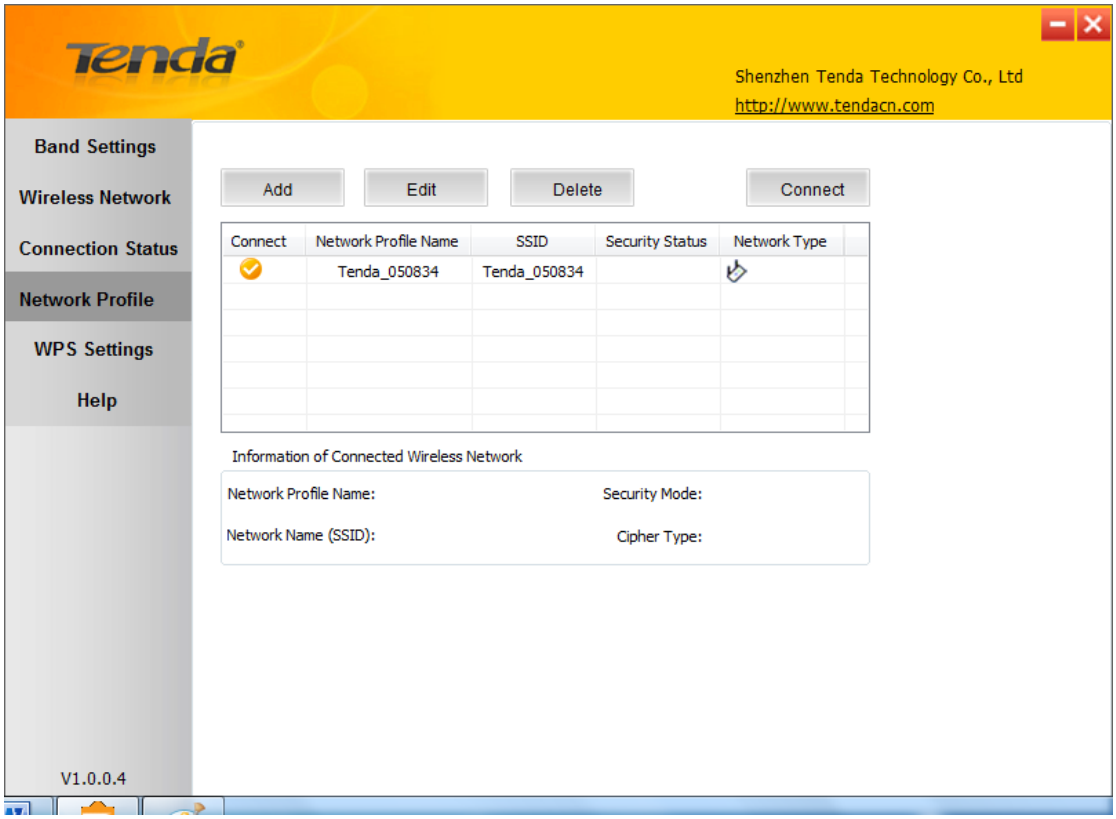
ASCII characters include any alphanumeric characters.

4.3 Connection Status

If you have successfully joined a wireless network, you can view details of the connection and traffic statistics.

4.4 Network Profile

Also, you can manually add a profile on the **Network Profile** screen to connect to a specified wireless network. After the adapter joins the network, it automatically saves the network connection information to a profile, which can be used by adapter utility. The next time you launch adapter utility, it will automatically connect to the network you previously joined if there's no change in the network information. If you wish to join a hidden network (A hidden network does not broadcast its SSID), you must add a profile to manually connect to it.

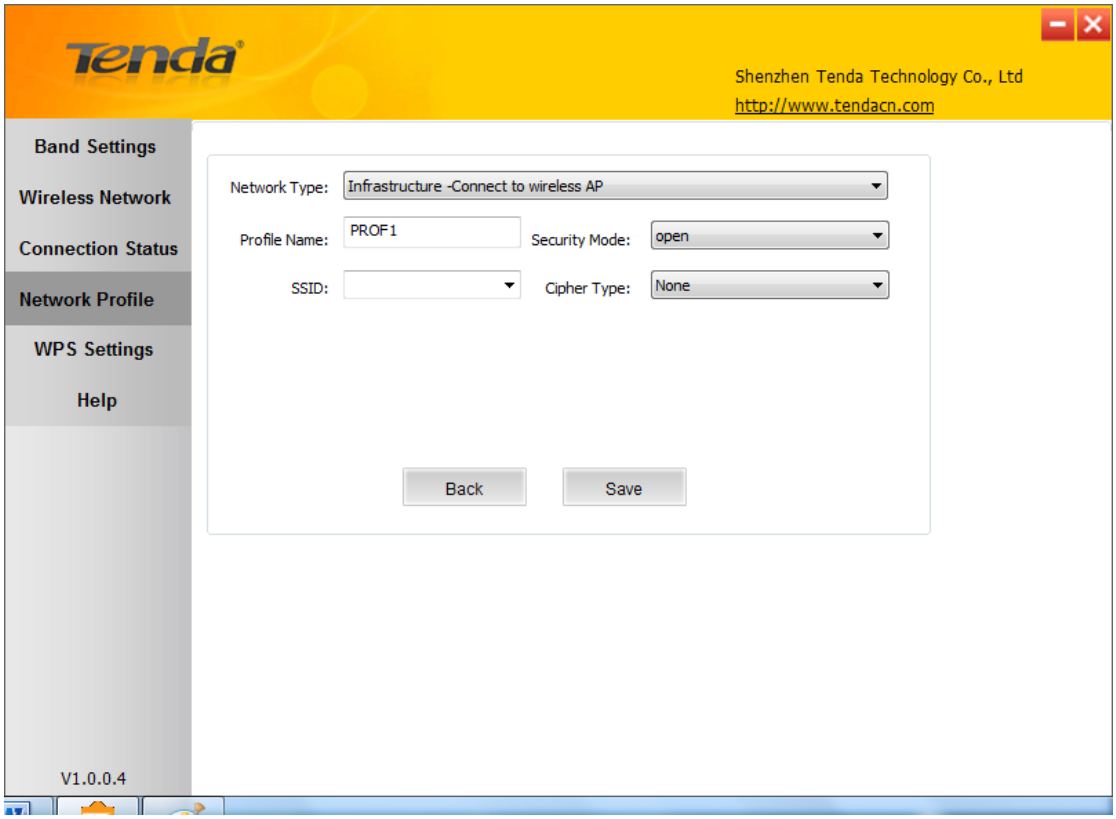


Add: Click to create a new wireless network profile;

Delete: Click to remove an existing profile;

Edit: Click to to edit a current profile;

An 802.11 wireless adapter (WNIC) can operate in two modes known as infrastructure mode and ad hoc mode:



Infrastructure: In an infrastructure mode network the wireless adapter needs a wireless access point or a wireless router for communication. All wireless nodes in an infrastructure mode network connect to an access point or a wireless router.

Ad-hoc: A wireless ad hoc network does not rely on a preexisting infrastructure, , such as routers in wired networks or access points in managed (infrastructure) wireless networks. It typically refers to any set of networks where all devices have equal status on a network and are free to associate with any other ad hoc network device in link range in peer to peer communication mode.

4.4.1 Profile Set Up for Infrastructure Mode

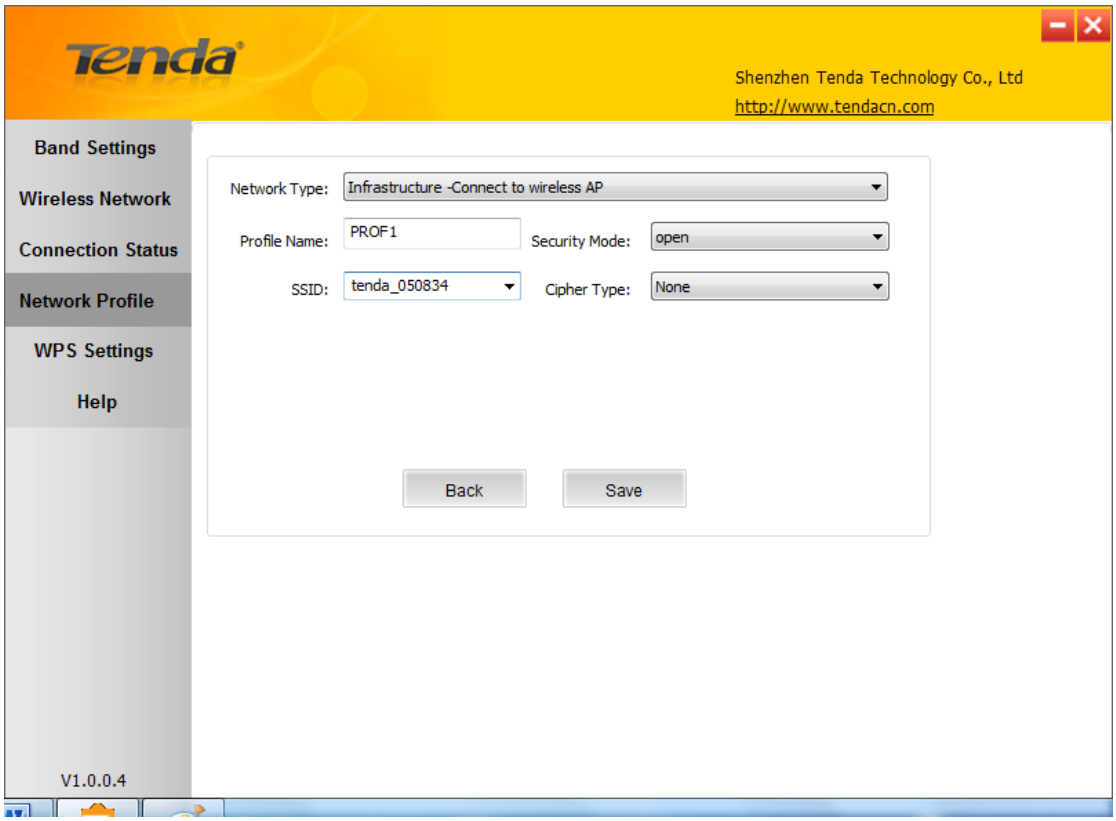
If you plan to connect your wireless adapter to an existing wireless AP or wireless router, please select the Infrastructure mode. Setting up infrastructure mode for wireless connectivity is not that hard, all we need is to follow below instructions.

a). Click **Add** and select **Infrastructure** from the appearing dialog box.

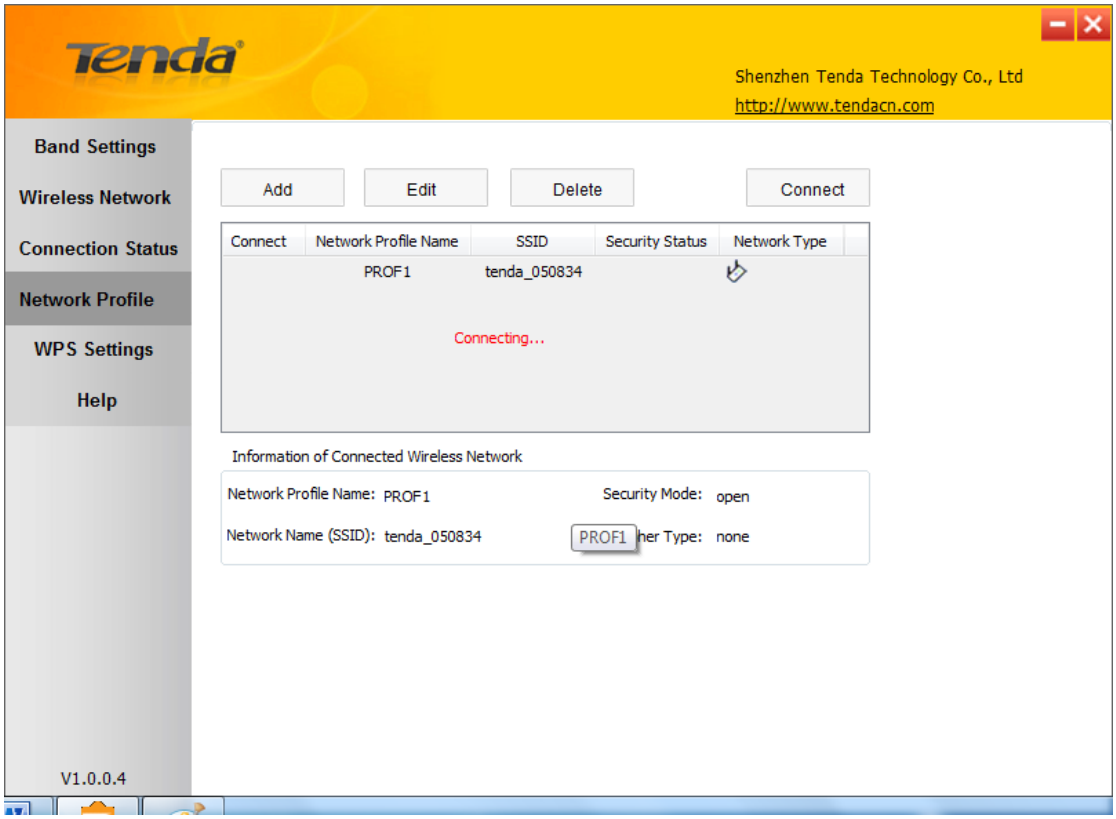
b). Specify a profile name and select the wireless network (SSID) you wish to join.

c). Specify the authentication mode and encryption mode, say, "WPA - PSK" and "AES";

d) Enter the security key and click **Save**.



Now, you may see the added profile in the list. You can edit or delete it. By clicking **Connect**, you will soon connect to the wireless network specified in the profile.



⚠ **Note:**

If you wish to join a hidden network (wireless AP or wireless router that does not broadcast its SSID), you must add a profile to manually connect to it.

4.4.2 Profile Set Up for Ad Hoc Mode

By using ad hoc mode for communication, each PC must have a wireless adapter for sharing resources. Setting up the Ad Hoc is easy. Simply follow below instructions:

a). Configure a static IP address for each wireless adapter. All PCs on the Ad Hoc network must be configured with static IP addresses manually. For more information, see ***Appendix 1***.

e) Enter an unused IP address and subnet mask.

For example: If you set your wireless adapter's IP address as 192.168.0.1, then you must set other adapters to IP addresses between 192.168.0.2-192.168.0.254.

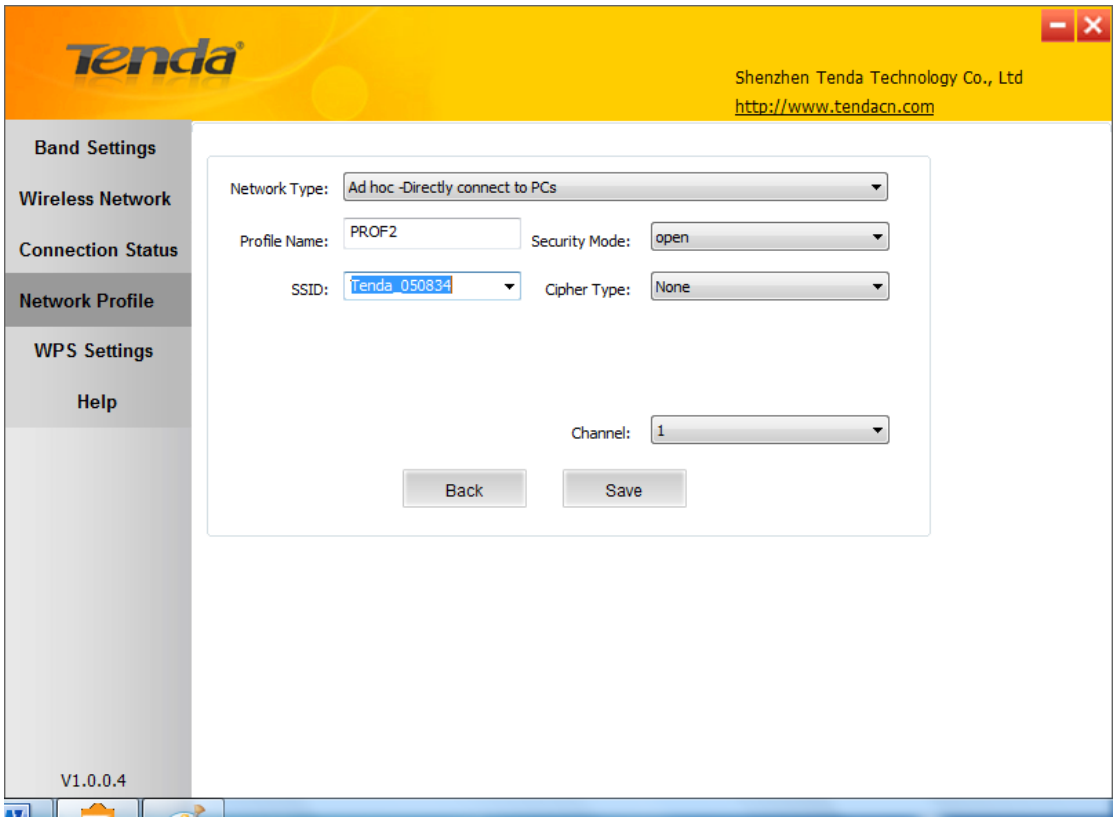
b. To add Ad Hoc profile:

a). Click **Add** and specify a SSID (wireless network name), say, "Tenda";

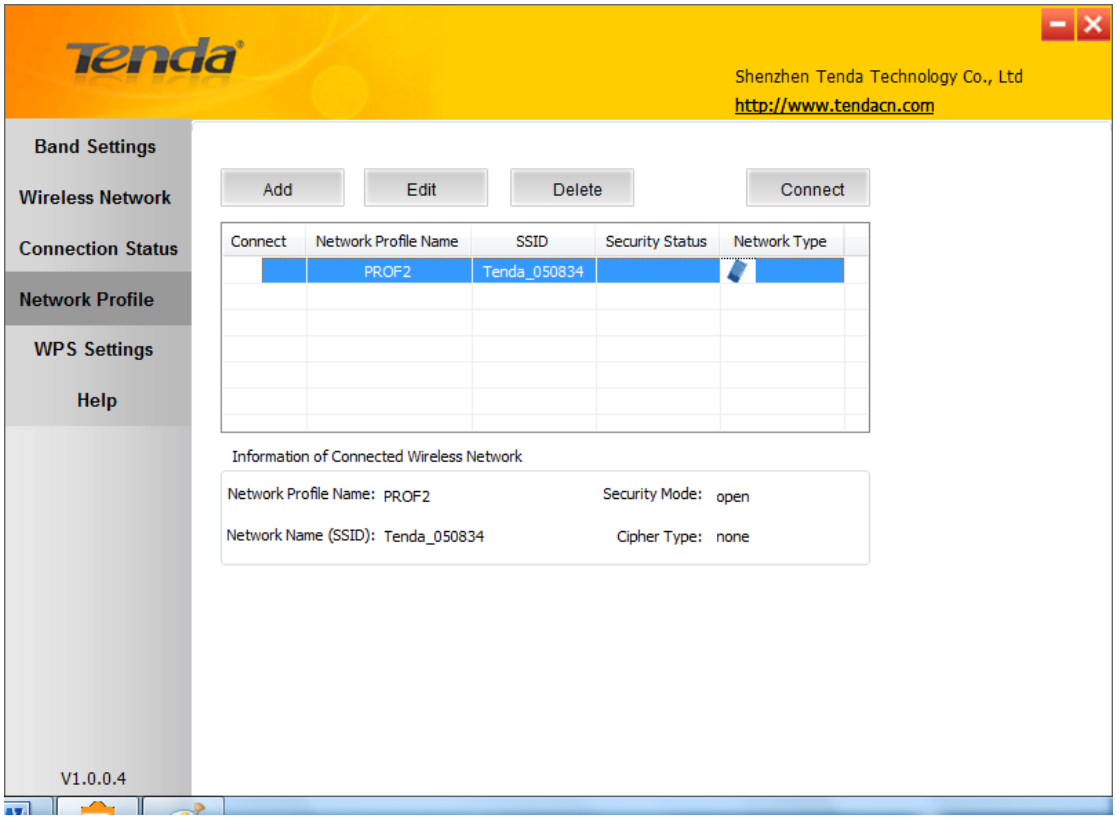
b). Select **Ad Hoc** as network type;

c). Select WEP and specify a WEP key or select None.

d). Select a channel.

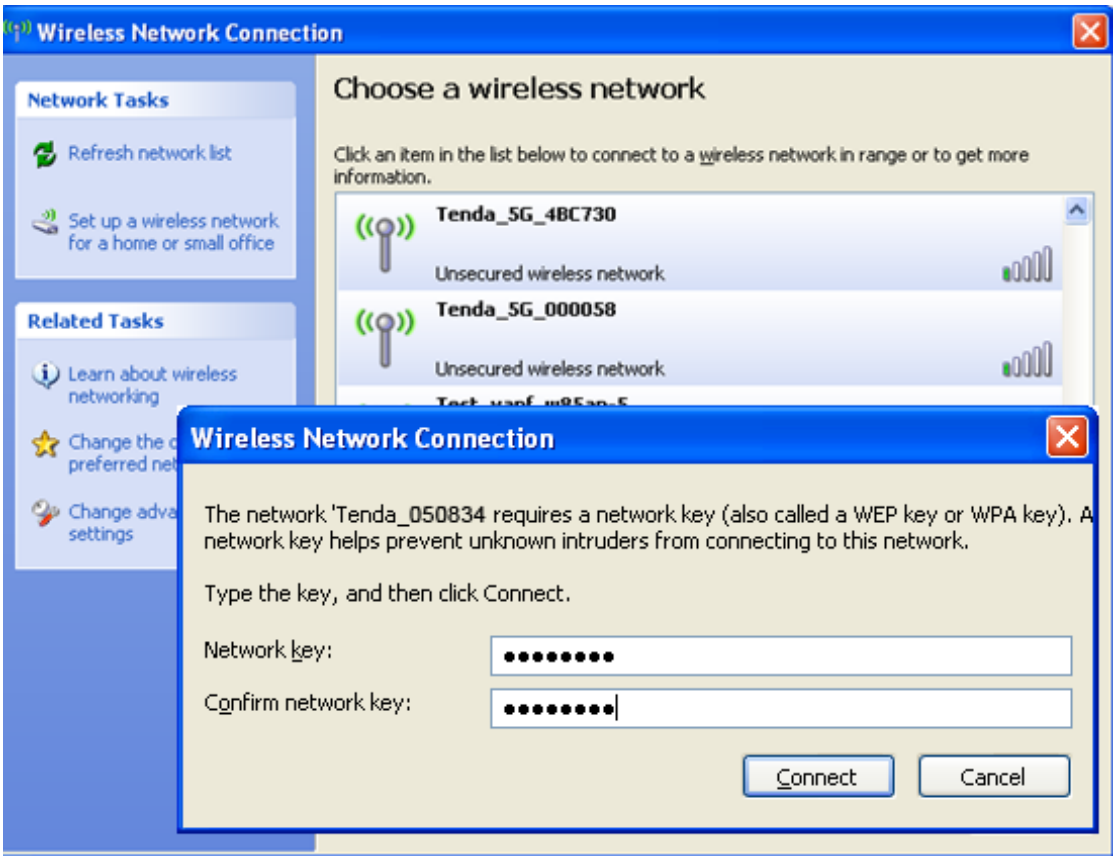


Click **Save** and you can see the network profile on the list.

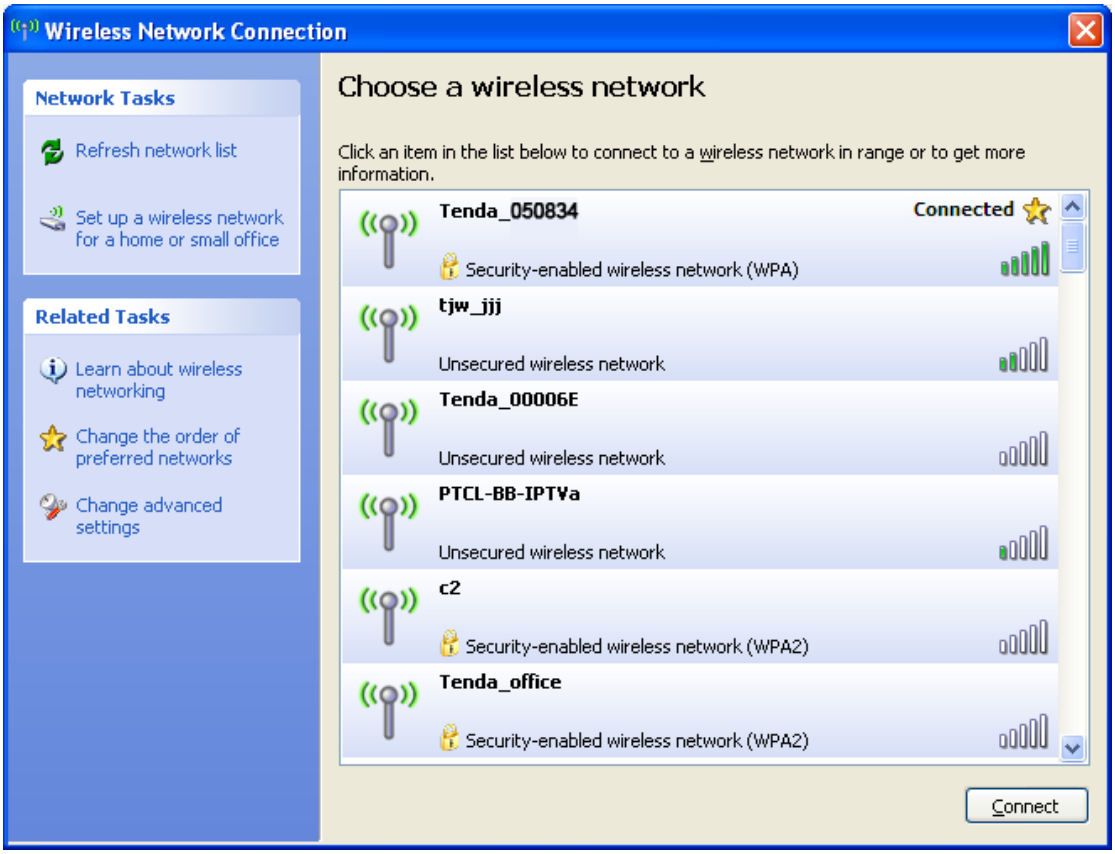


f) Search for the wireless network from devices on other nodes.

g) Double-click it, enter a security key if required and then click **Connect**.

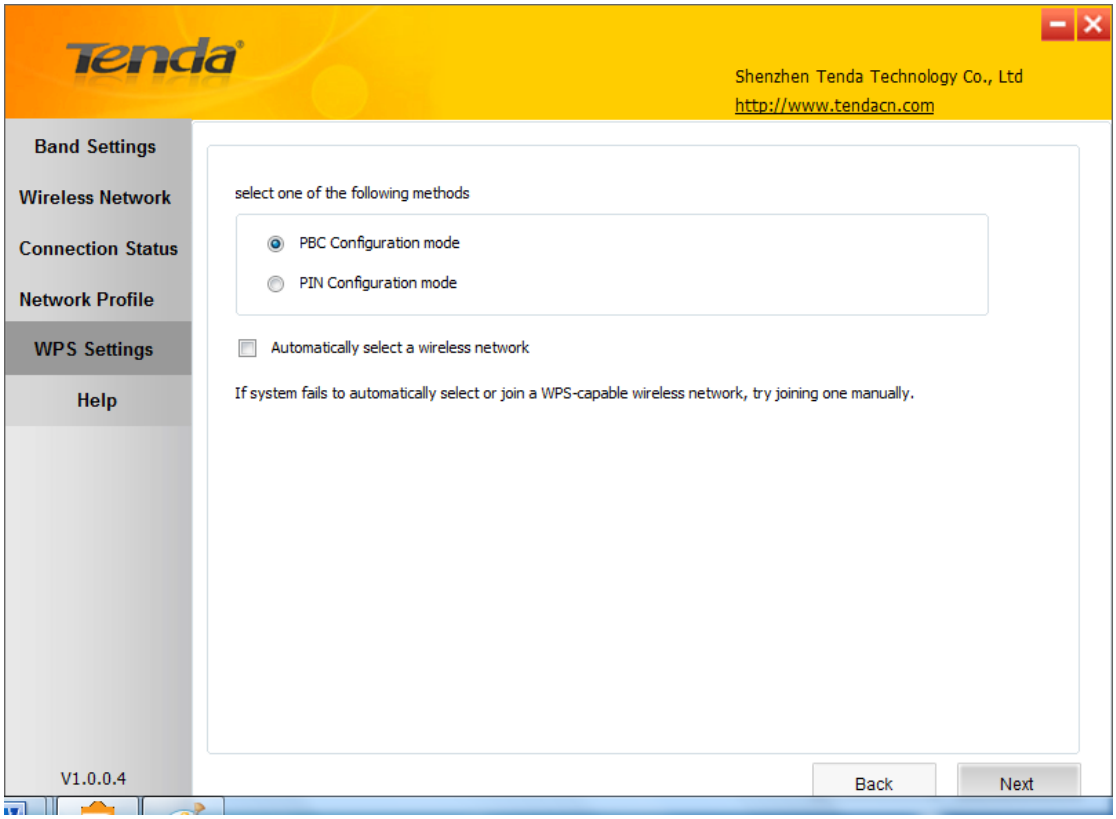


When below screen appears, you have successfully connected to it.



4.5 WPS Setup

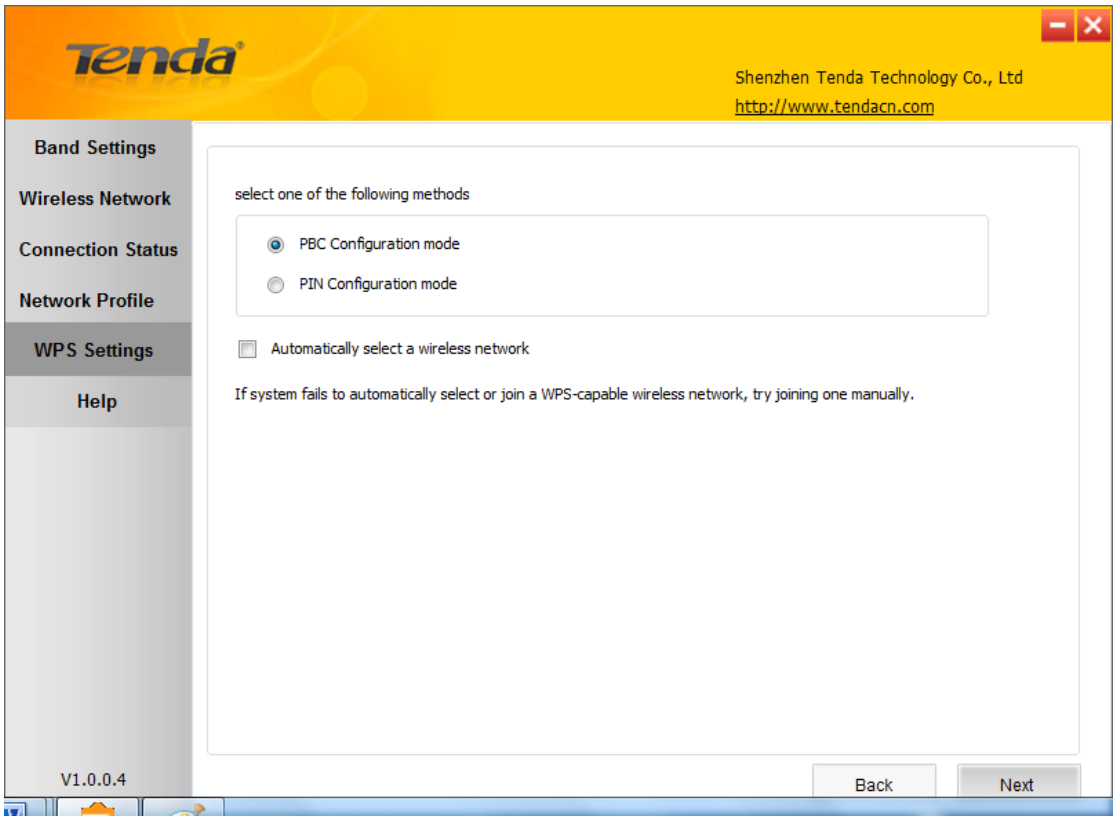
If your wireless network supports WPS, you can use WPS to join a wireless network. WPS can easily and quickly create secure wireless connections. System automatically adds the network profile upon a successful WPS connection.



PBC Configuration Mode

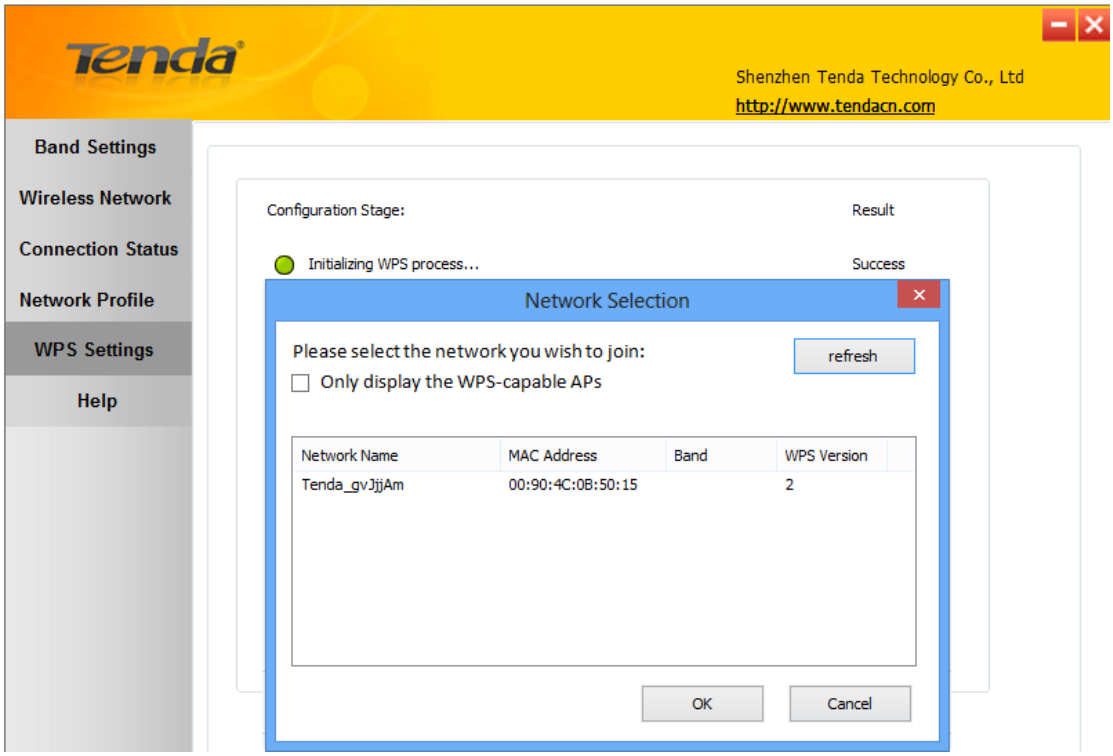
To join a wireless network using WPS PBC from Tenda adapter UI:

1. Select **WPS Settings**-> **PBC Configuration Mode.**



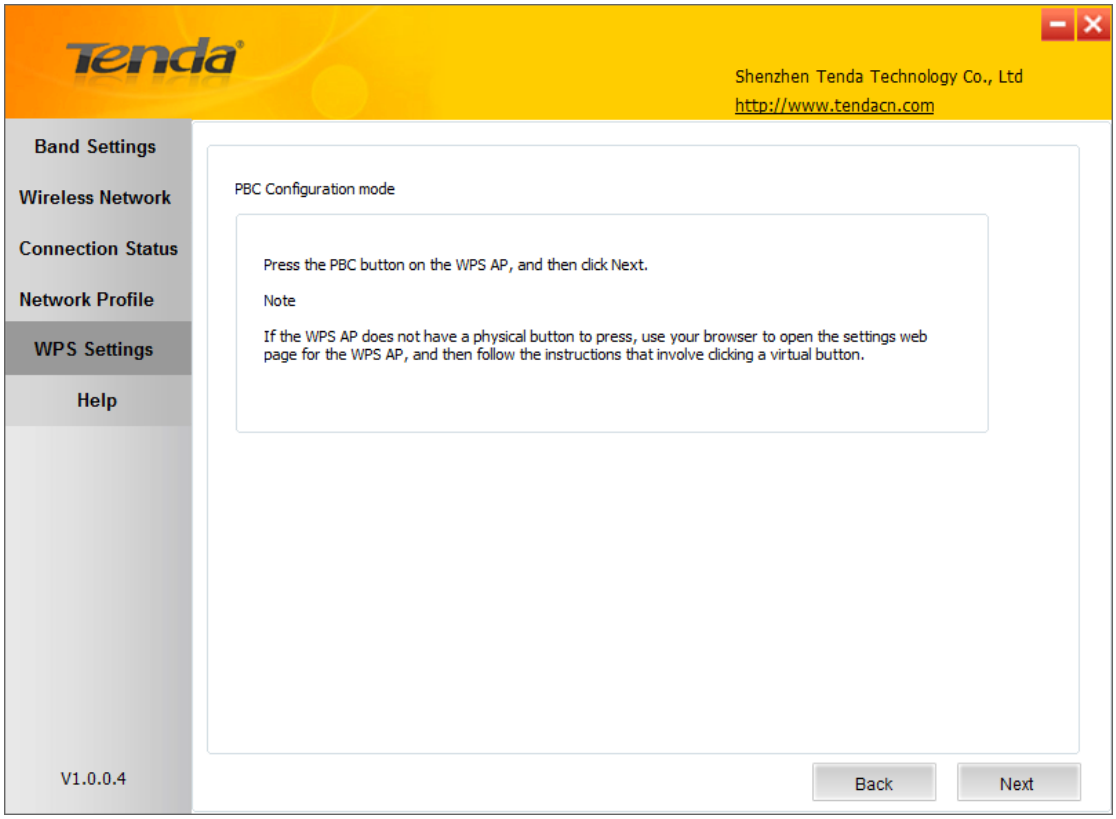
Tip:

a) **Automatically select a wireless:** Automatically select a WPS-capable AP from searched results to join. This field is checked by default. If this field is left unchecked, you must manually select a WPS-capable AP to connect.



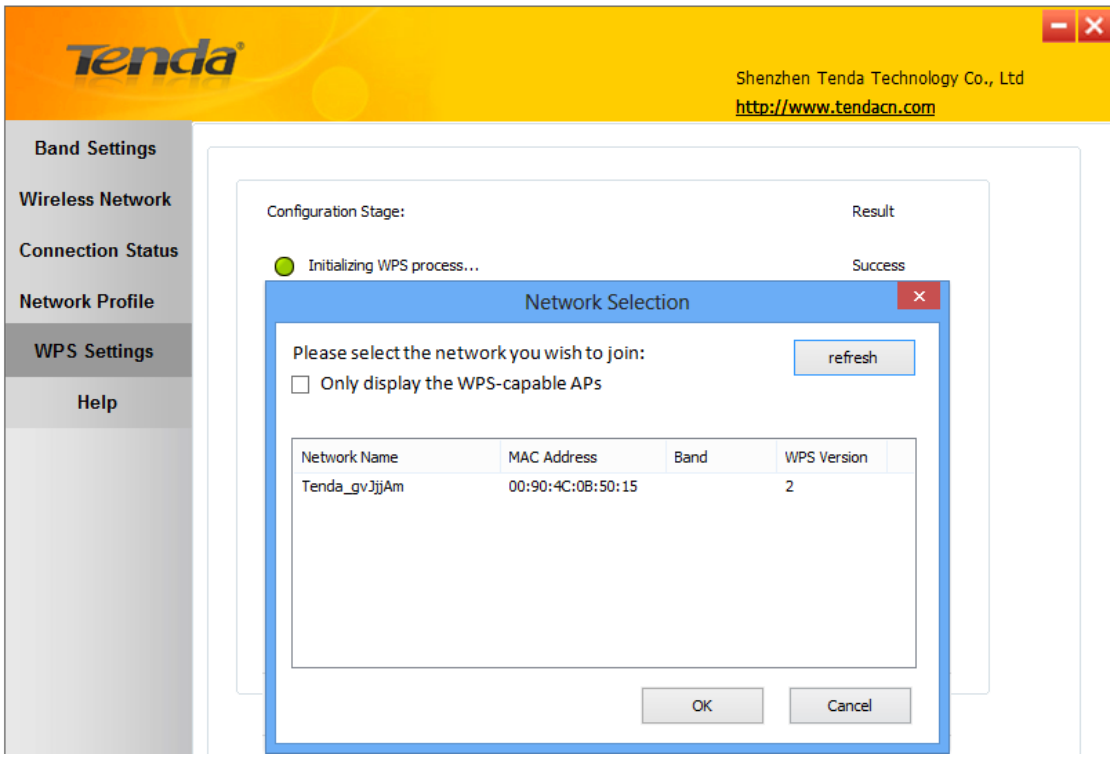
b) If there are multiple WPS-capable APs, manually select a WPS-capable AP that you wish to join and leave the Automatically select a wireless network field unchecked.

2. Click **Next** and follow onscreen WPS instructions to enable WPS-PBC on the WPS-capable AP.

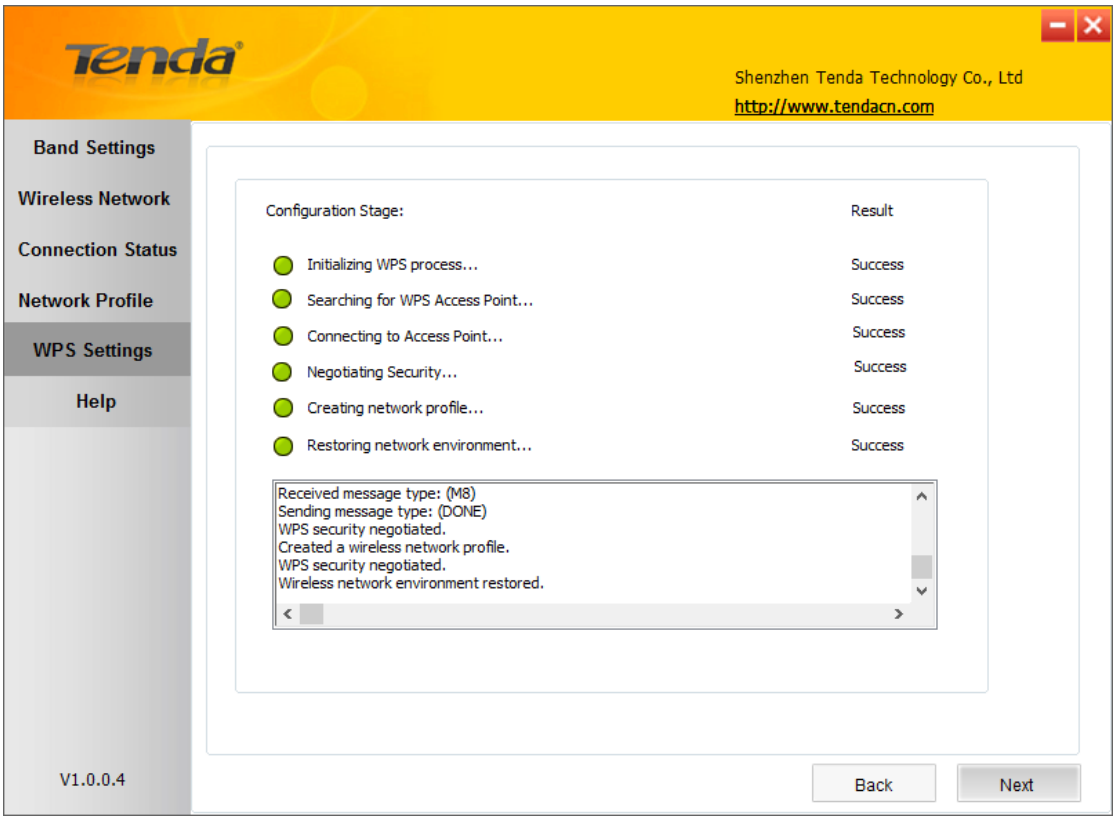


3. Then within 2 minutes, click **Next** to start WPS negotiation**.**

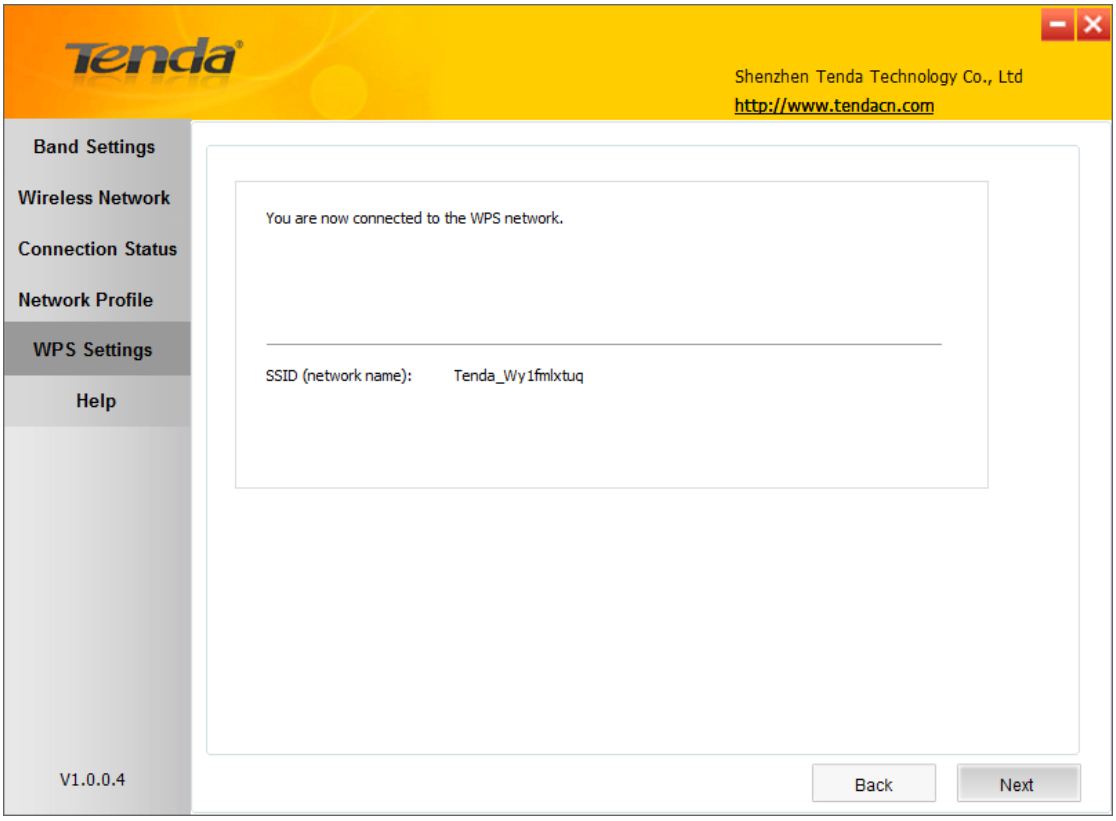
Negotiation Process:



Negotiation Completed Successfully:



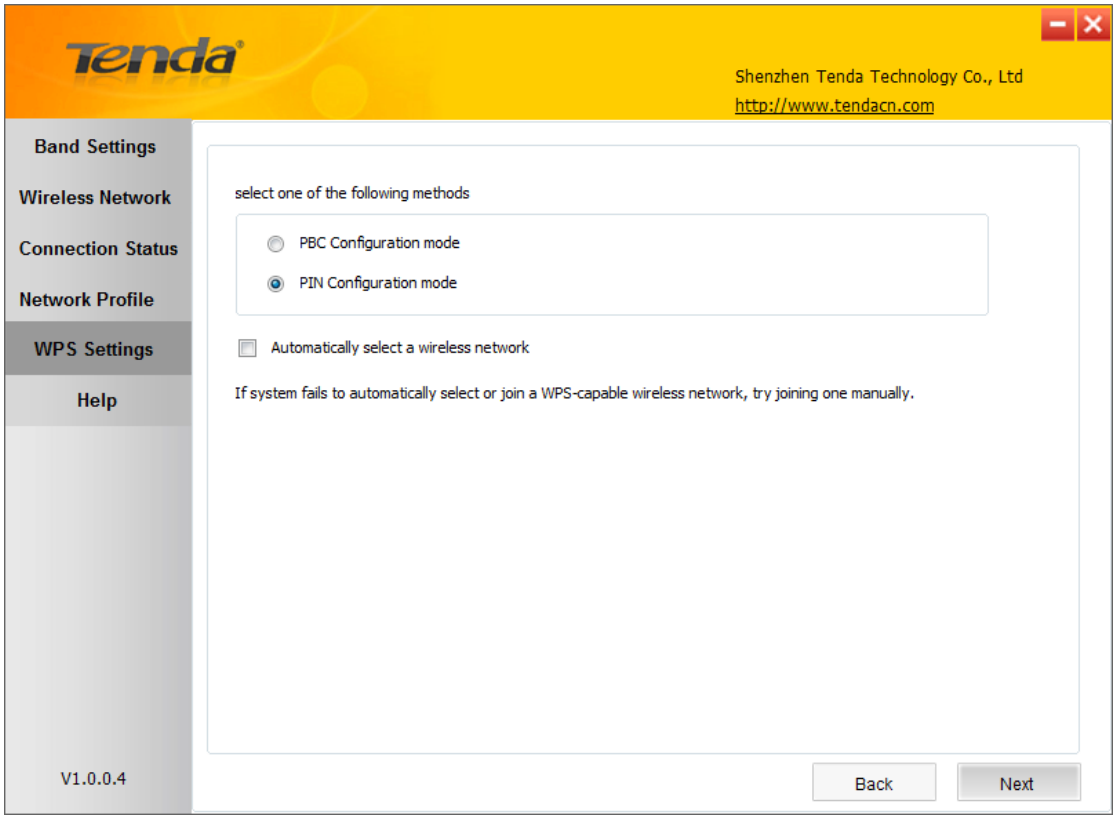
4. Now, simply click **Next** and you will see the SSID of the wireless network you joined. The WPS-PBC connection is now completed.



PIN Configuration Mode

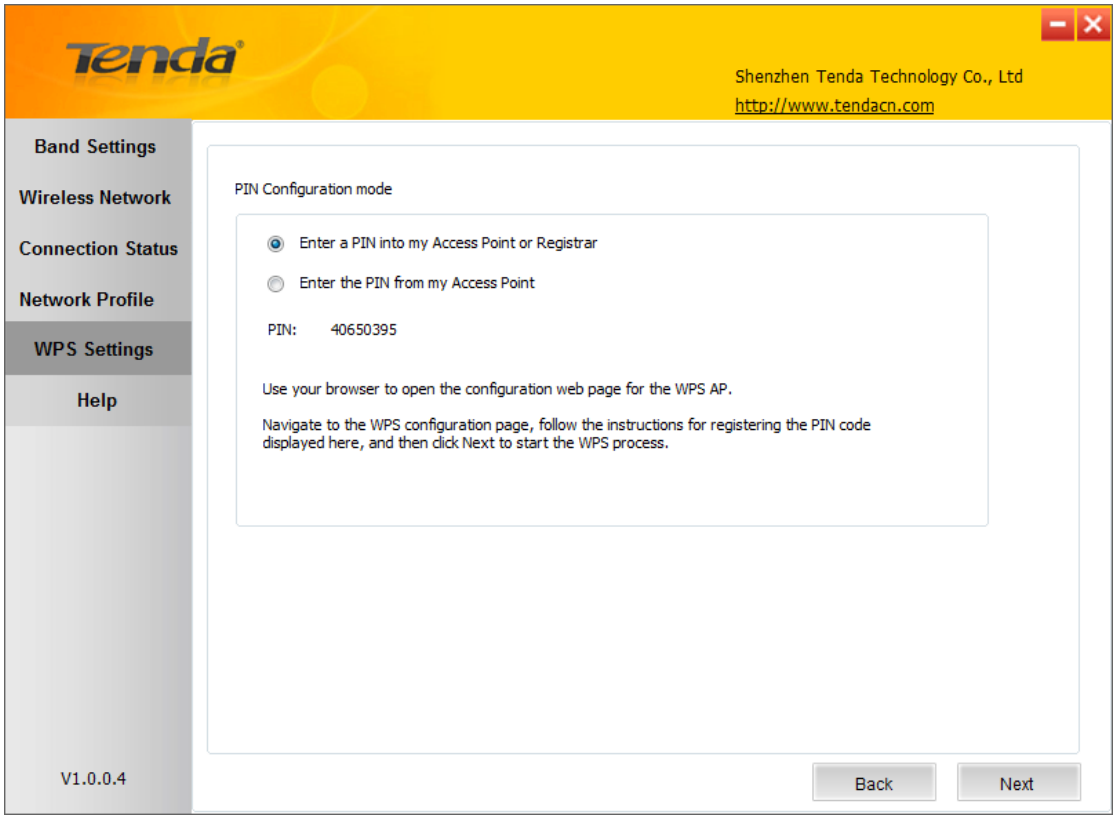
To join a wireless network using WPS PIN from Tenda adapter UI:

1. Click **WPS Settings-> PIN Configuration Mode.**



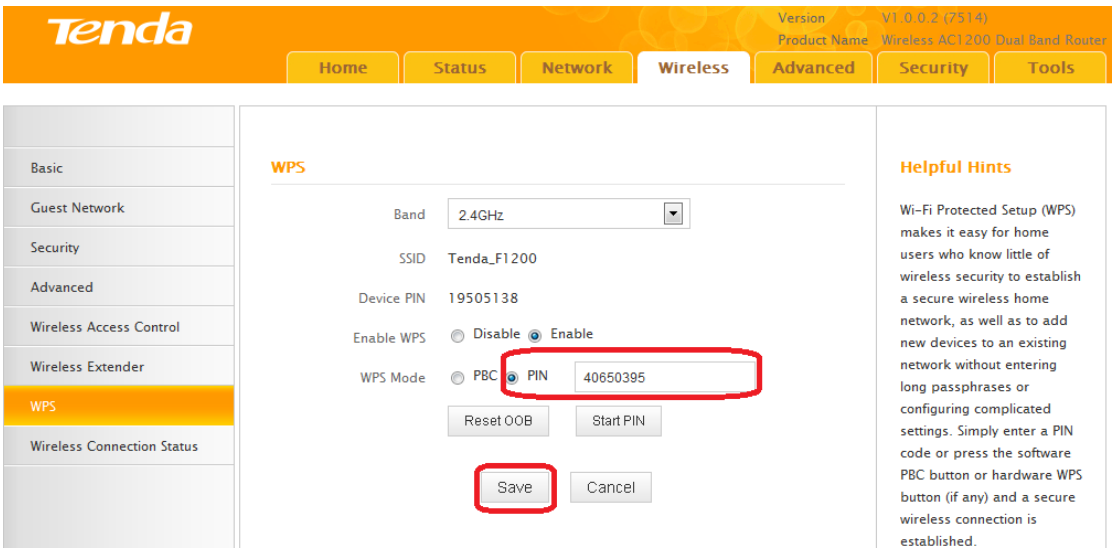
2. Click **Next** and you will find two available WPS-PIN modes:

✓ **Enter a PIN into my Access Point or Registrar**

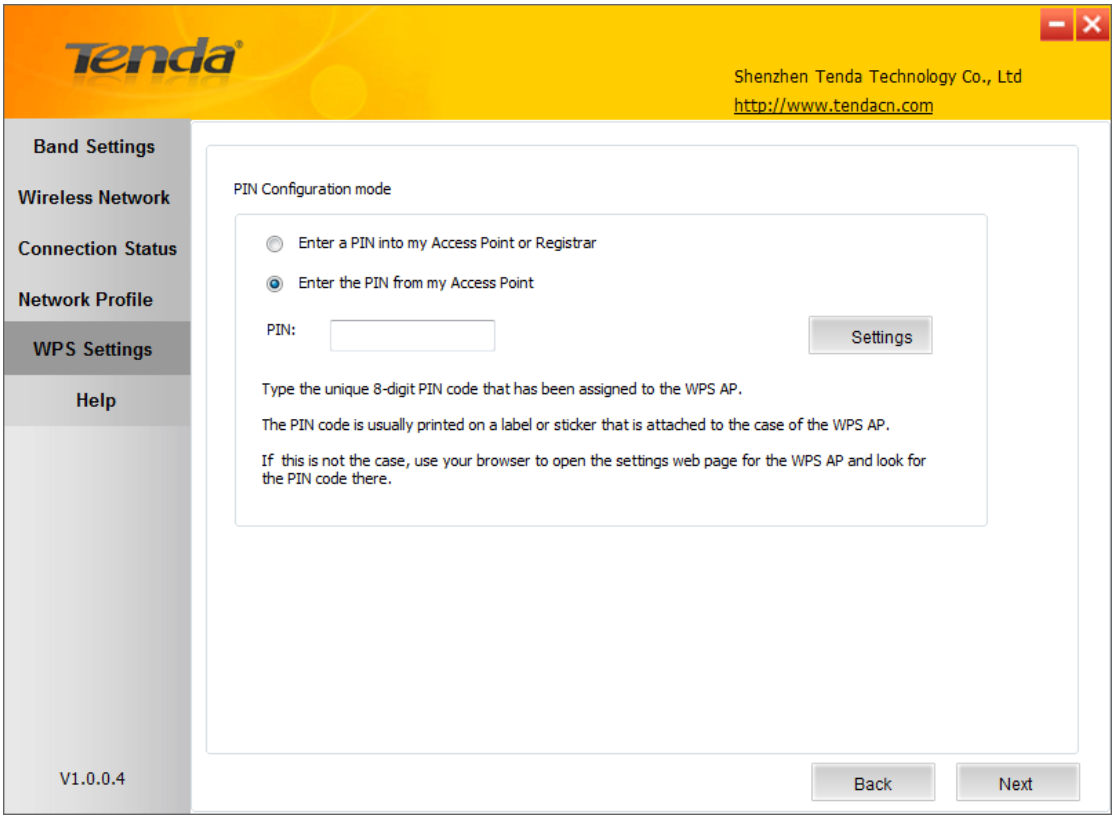


Follow onscreen instructions to copy NIC's PIN to the wireless AP and enable WPS-PIN on the wireless AP.

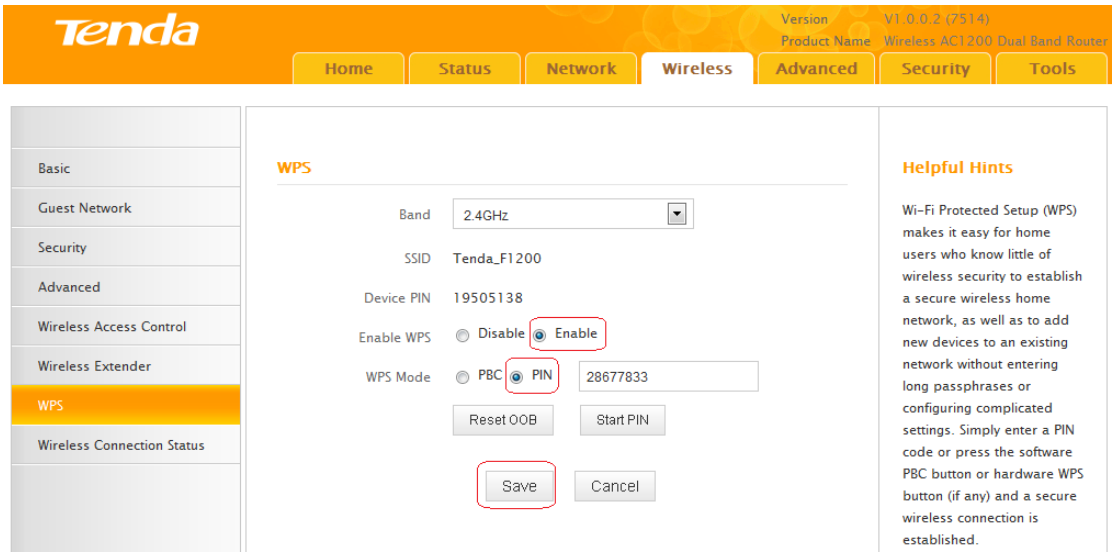
For example: If you wish to connect to Tenda F1200, simply copy the PIN to Tenda F1200 and enable WPS-PIN on the Tenda F1200.



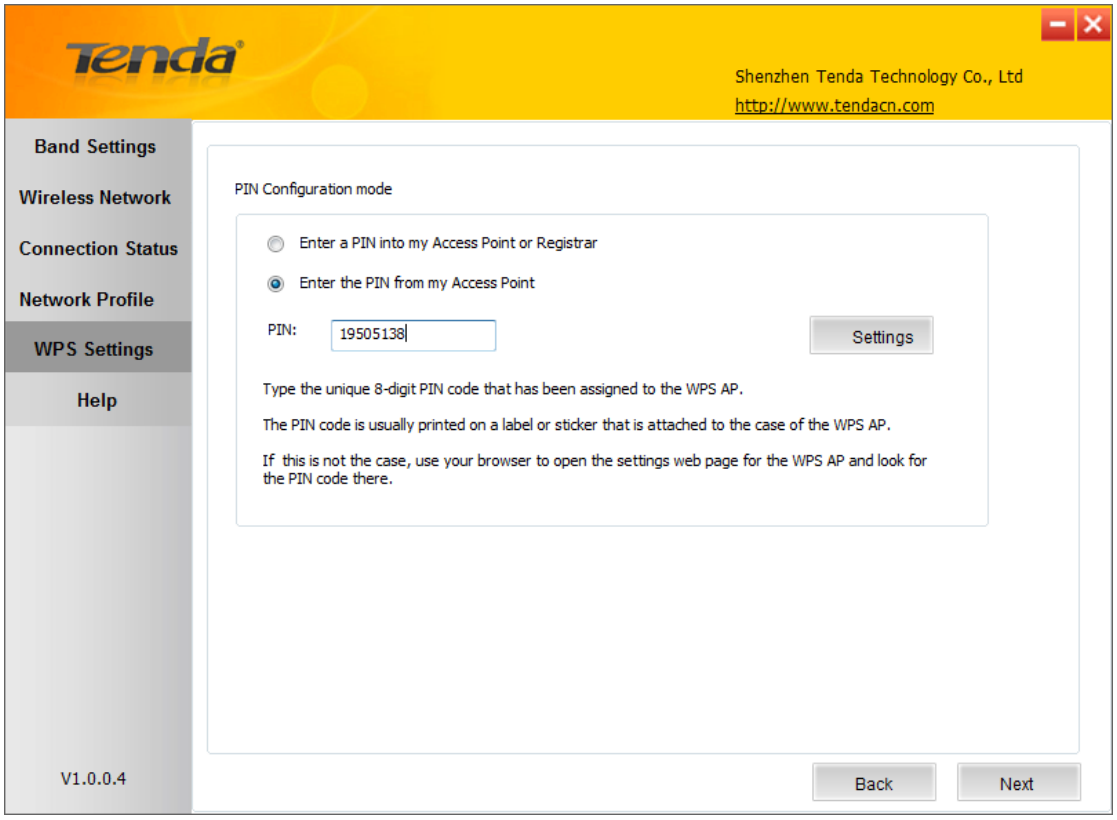
✓ **Enter the PIN from my Access Point**



First, enable the WPS-PIN on the wireless AP you wish to join, say, Tenda F1200.



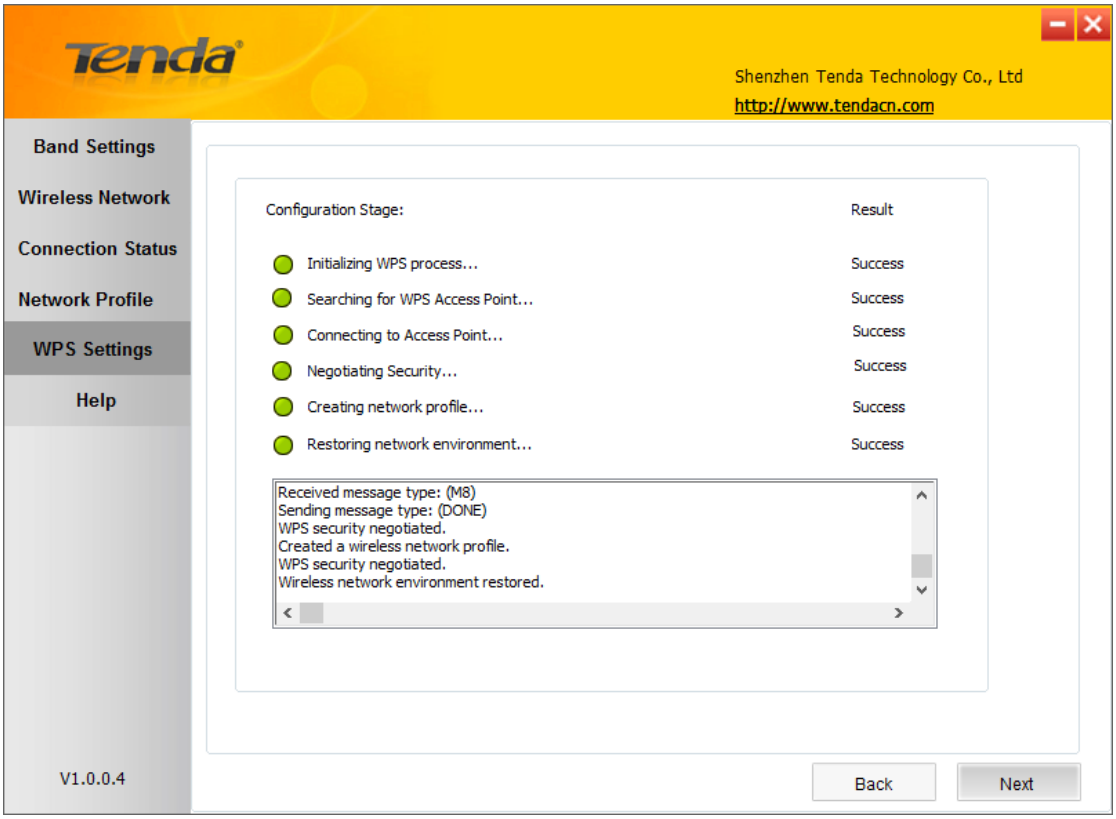
Second, enter the wireless AP's PIN.



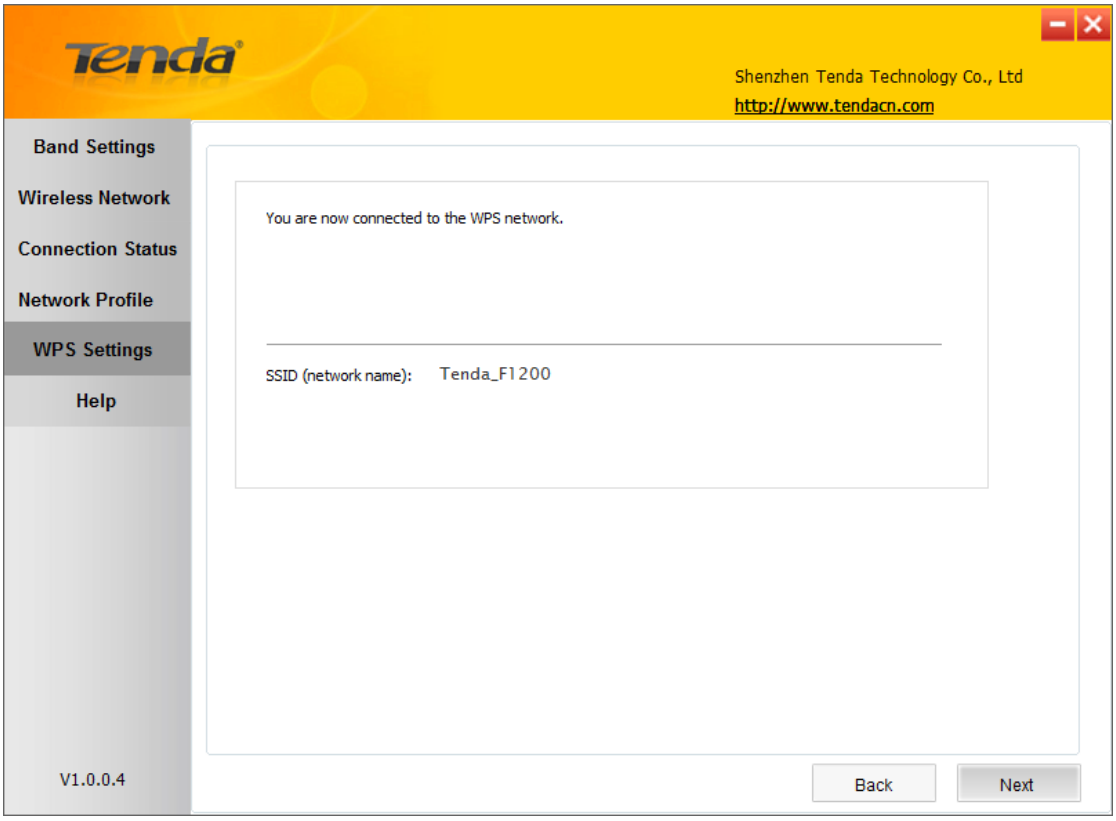
Also, you can customize the SSID and security settings.

And then click **Next** to start WPS-PIN negotiation.

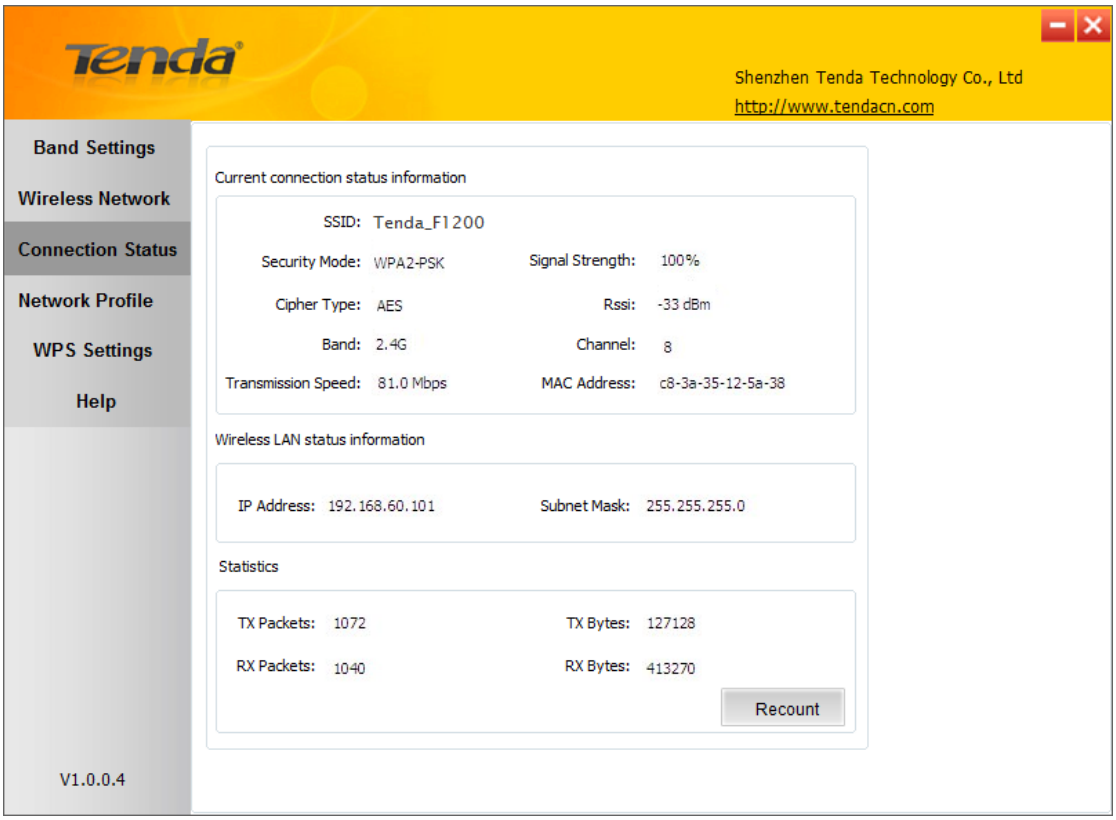
Negotiation Completed:



Now, simply click Next and you will see the SSID of the wireless network you joined. The WPS-PIN connection is now completed.



Click **Finish** and you can view the connection status.



4.6 Help

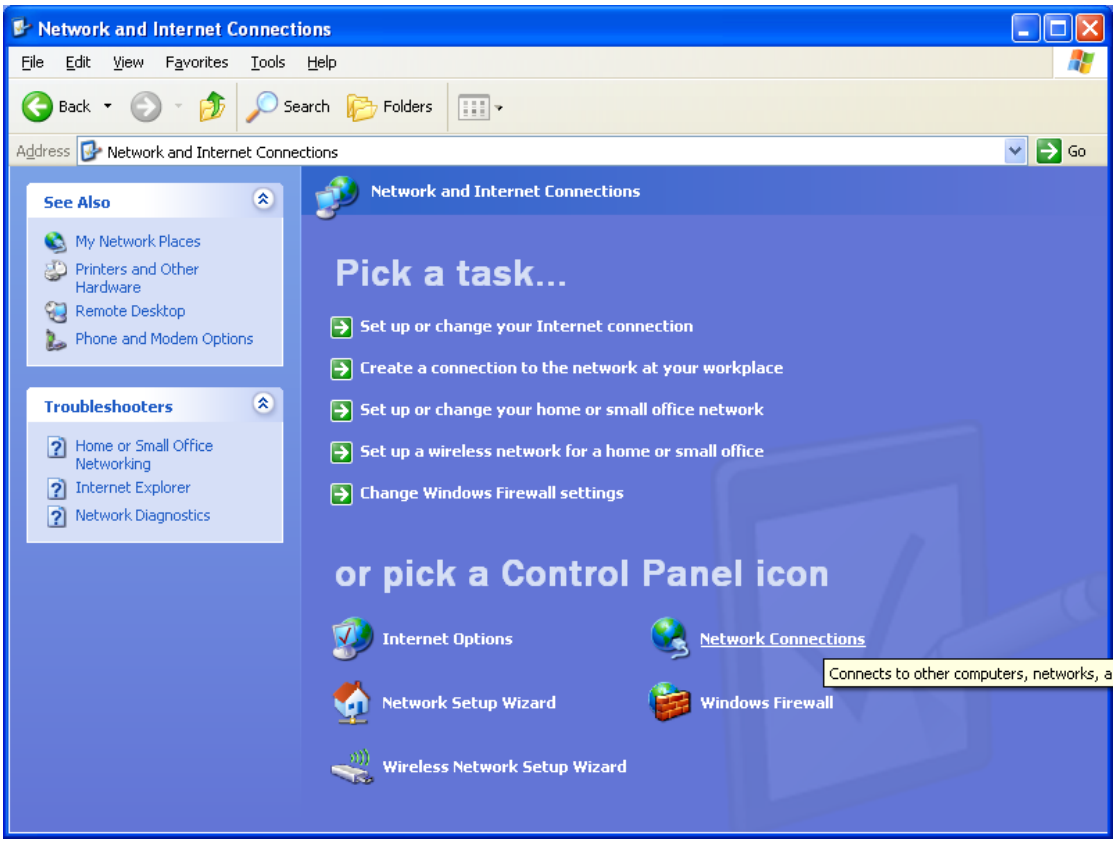
Click the **Help** button to display help.

Chapter 5 Appendix

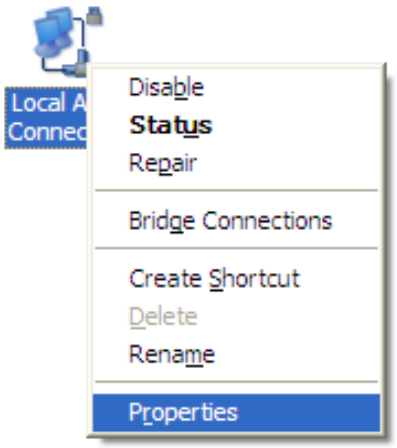
Appendix 1 TCP/IP Settings

If you are using Windows XP, do as follows:

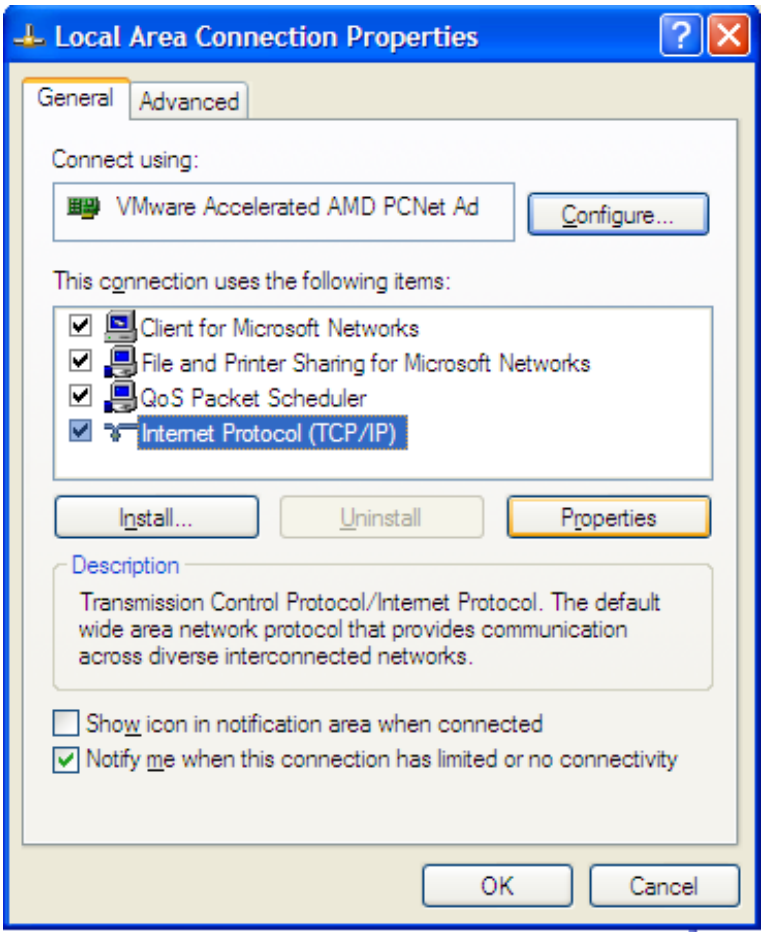
1. Click **Start** > **Control Panel** > **Network and Internet Connections** > **Network Connections.**



2. Right-click on the **Local Area Connection** and select **Properties**.



3. Select **Internet Protocol (TCP/IP)** and click **Properties**.

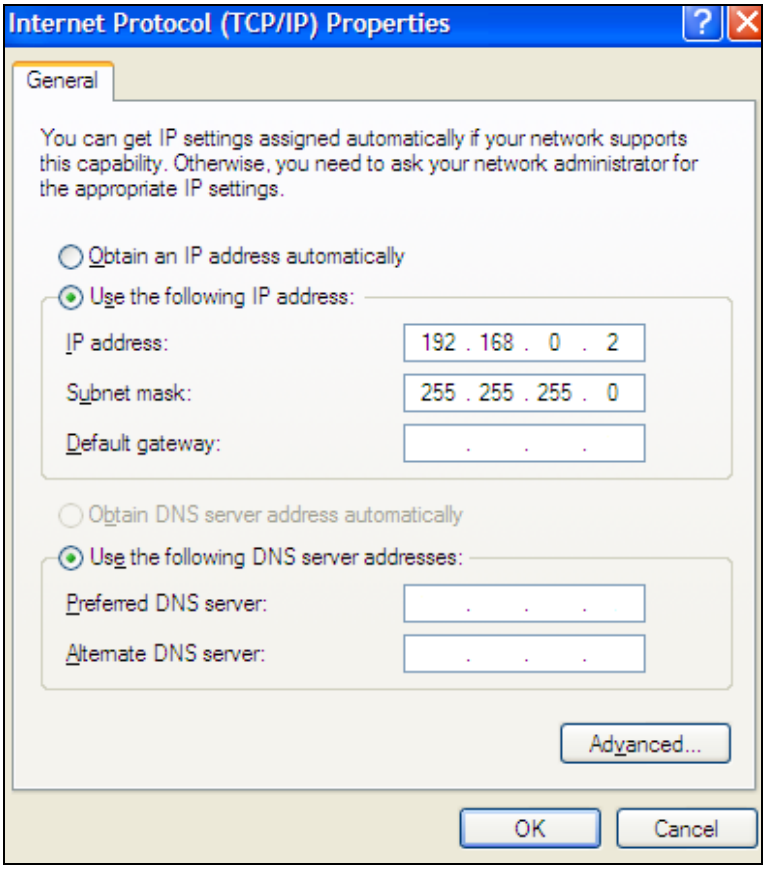


4. Select "**Use the following IP address**".

IP address: Enter 192.168.0.xxx where xxx can be any number between 2 and 253).

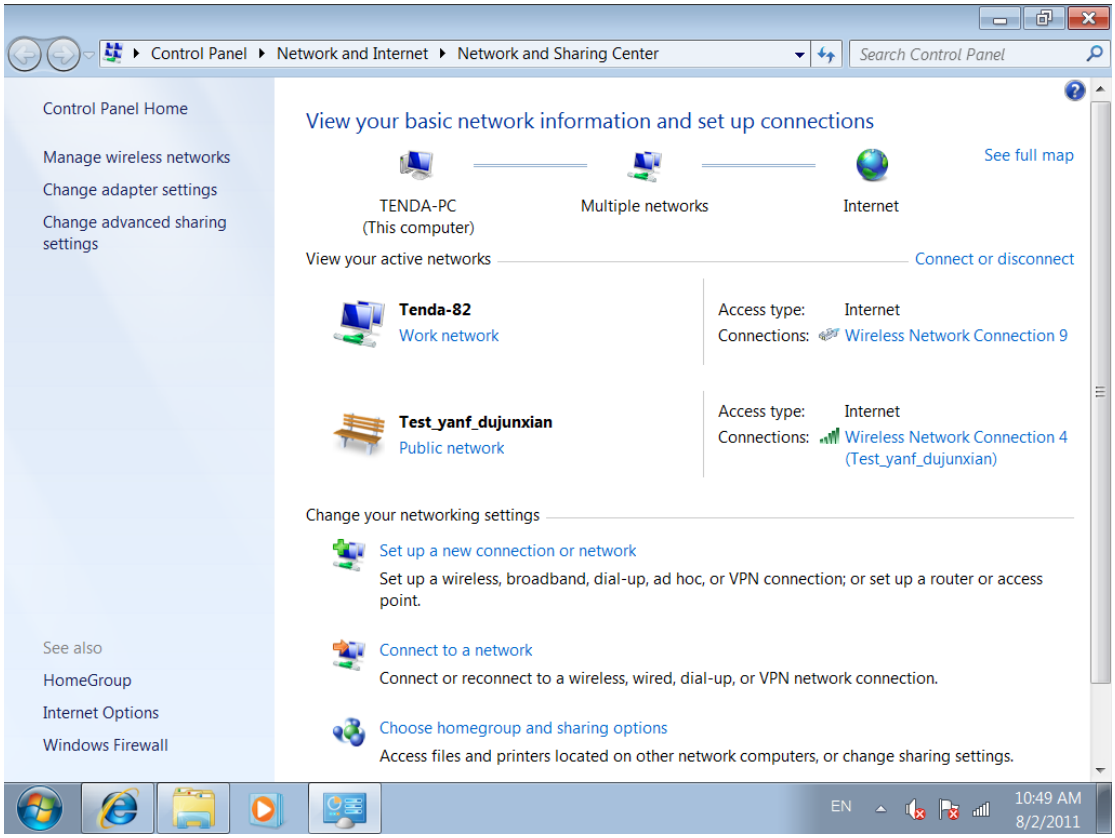
Subnet mask: Enter 255.255.255.0

Click OK twice to save your settings.

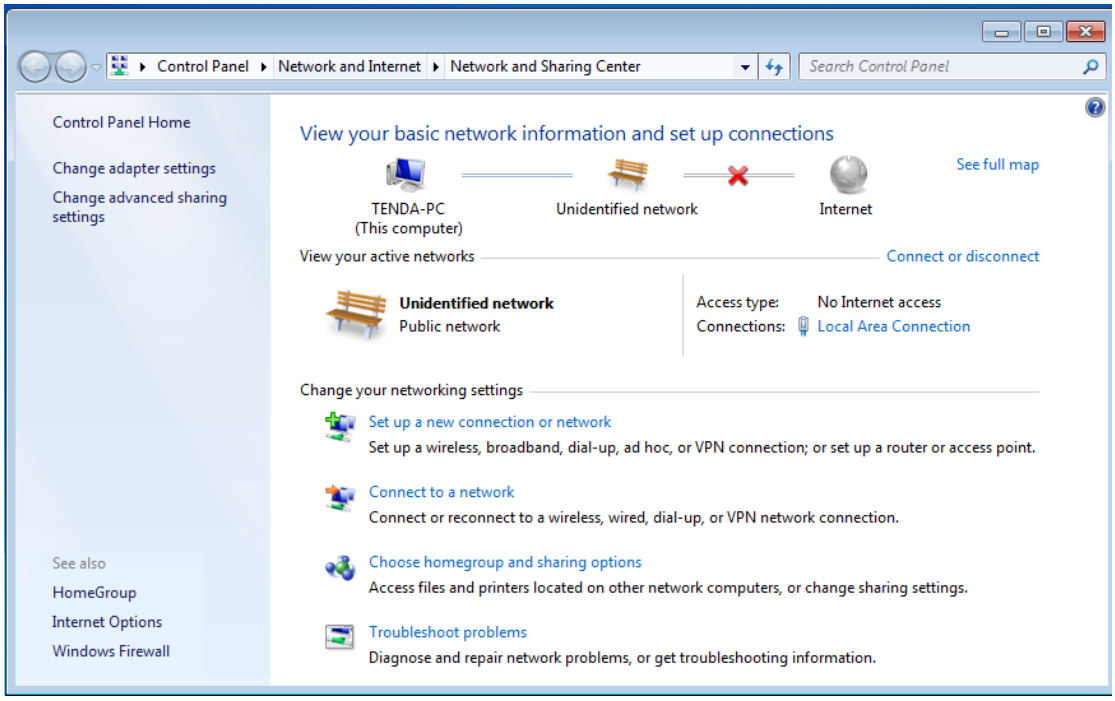


If you are using Windows 7, do as follows:

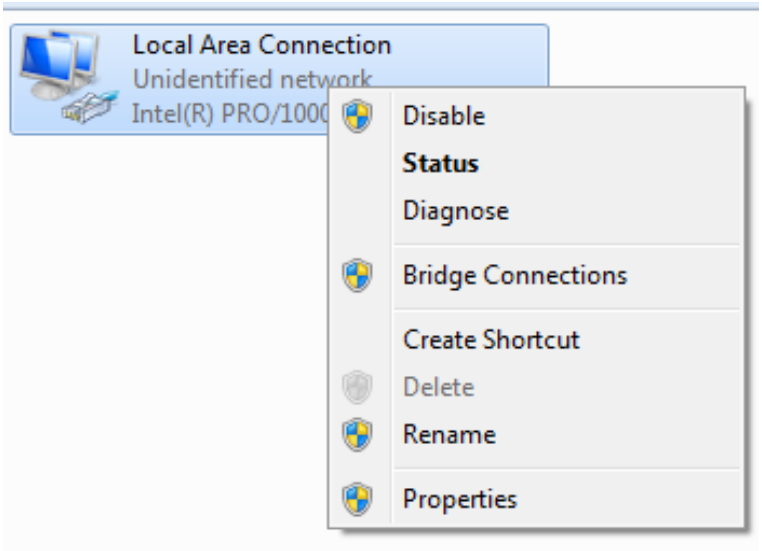
1. Click on **Start** > **Control Panel** > **Network and Internet** > **Network and Sharing Center**.



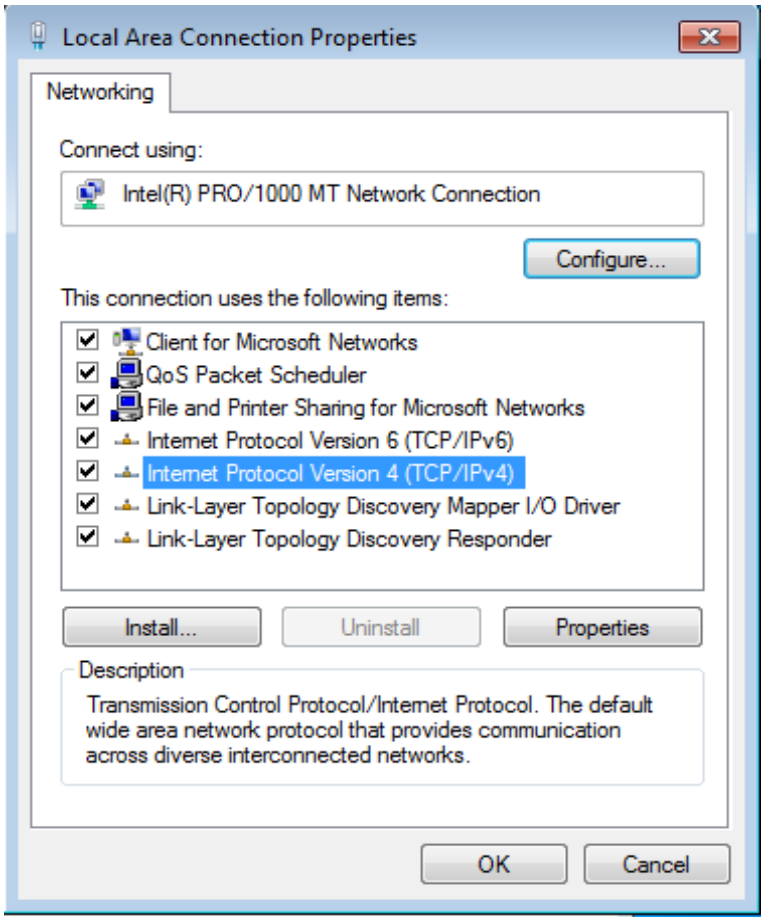
2. Click "**Change adapter settings**".



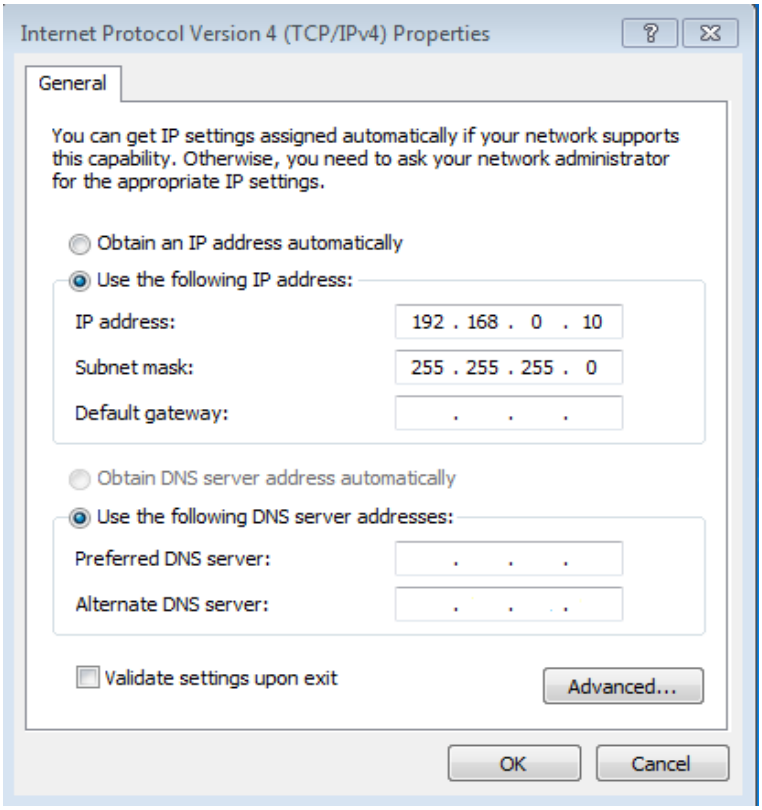
3. Right-click on the **Local Area Connection** and select **Properties**.



4. Select **Internet Protocol Version 4 (TCP/IPv4)** and click **Properties** or directly double-click on **Internet Protocol Version 4 (TCP/IPv4)**.



5. Select **Use the following IP address.**



IP address: Enter 192.168.0.xxx where xxx can be any number between 2 and 253).

Subnet mask: Enter 255.255.255.0

Click **OK** twice to save your settings.

Appendix 2 Glossary

802.11ac: IEEE 802.11ac is a wireless computer networking standard of 802.11, currently under development, providing high-throughput wireless local area networks on the 5 GHz band. Theoretically, this specification will enable multi-station WLAN throughput of at least 1 gigabit per second and a maximum single link throughput of at least 500 megabits per second (500 Mbit/s).

802.11a: 802.11a is an amendment to the IEEE 802.11 specification that added a higher data rate of up to 54 Mbit/s using the 5 GHz band.

802.11b: 802.11b, is an amendment to the IEEE 802.11 wireless networking specification that extends throughput up to 11 Mbit/s using the same 2.4 GHz band.

802.11e: 802.11e is an approved amendment to the IEEE 802.11 standard that defines a set of Quality of Service enhancements for wireless LAN applications through modifications to the Media Access Control (MAC) layer. The standard is considered of critical importance for delay-sensitive applications, such as Voice over Wireless LAN and streaming multimedia.

802.11g: 802.11g is an amendment to the IEEE 802.11 specification that extended throughput to up to 54 Mbit/s using the same 2.4 GHz band as 802.11b.

802.11h: 802.11h, refers to the amendment added to the IEEE 802.11 standard for Spectrum and Transmit Power Management Extensions. It solves problems like interference with satellites and radar using the same 5 GHz frequency band. It was originally designed to address European regulations but is now applicable in many other countries.

802.11i: 802.11i, implemented as WPA2, is an amendment to the original IEEE 802.11.

802.11j: 802.11j is an amendment to the IEEE 802.11 standard designed specially for Japanese market.

802.11n: 802.11n is an amendment to the IEEE 802.11 standard, which improves network throughput over the two previous standards—802.11a and 802.11g—with a significant increase in the maximum net data rate. 802.11n standardized support for multiple-input multiple-output and frame aggregation, and security improvements, among other features.

IEEE 802.15: IEEE 802.15 is a working group of the IEEE 802 standards committee which specifies Wireless Personal Area Network (WPAN) standards. It includes seven task groups. Task group one is based on Bluetooth technology.

IEEE 802.16: IEEE 802.16 is a series of Wireless Broadband standards authored by the Institute of Electrical and Electronics Engineers (IEEE). Although the 802.16 family of standards is officially called Wireless MAN in IEEE, it has been commercialized under the name “WiMAX” (from "Worldwide Interoperability for Microwave Access") by the WiMAX Forum industry alliance.

802.16a: 802.16a, also known as WiMAX, extends throughput up to 70Mbit/s transmission rate within the distance of 30 miles.

802.20: Delivers 1Mbit/s throughput for wireless MAN (Metropolitan area network).

IEEE 802.1X: IEEE 802.1X is an IEEE Standard for port-based Network Access Control (PNAC). It is part of the IEEE 802.1 group of networking protocols. It provides an authentication mechanism to devices wishing to attach to a LAN or WLAN.IEEE 802.1X defines the encapsulation of the Extensible Authentication Protocol (EAP) over IEEE 802 which is known as "EAP over LAN" or EAPOL.

WEP: Wired Equivalent Privacy (WEP) is a security algorithm for IEEE 802.11 wireless networks. Introduced as part of the original 802.11 standard, its intention was to provide data confidentiality comparable to that of a traditional wired network.

WPA: Wi-Fi Protected Access (WPA) and Wi-Fi Protected Access II (WPA2) are two security protocols and security certification programs developed by the Wi-Fi Alliance to secure wireless computer networks. The Alliance defined these in response to serious weaknesses researchers had found in the previous system, WEP (Wired Equivalent Privacy) and intended as an intermediate solution to WEP insecurities.

RSN: The Wi-Fi Alliance refers to their approved, interoperable implementation of the full 802.11i as WPA2, also called RSN (Robust Security Network). RSN, based on 802.1x, is introduced to supersede the security specification, WPA.

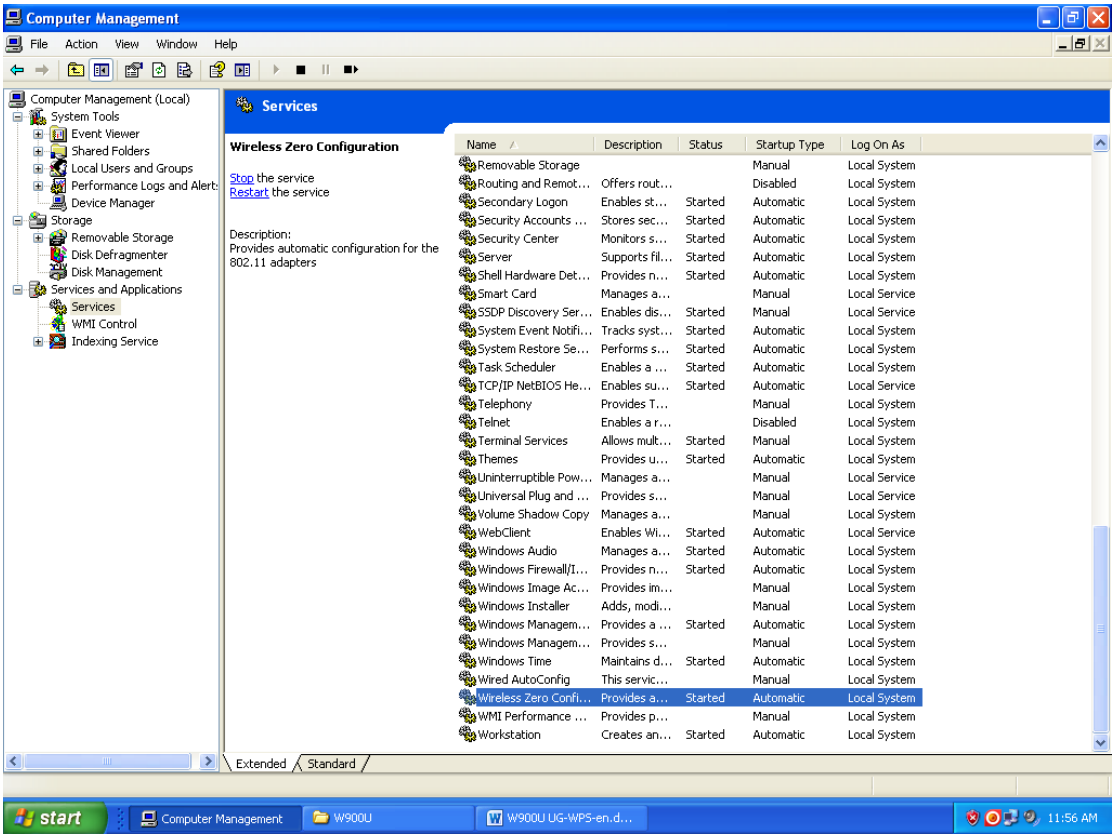
Appendix 3 Troubleshooting

Q1: How do I enable the WZC **(**Wireless Zero Configuration) service in Windows XP or enable WAC (WLAN AutoConfig) in Win dows 7/Win dows 8?

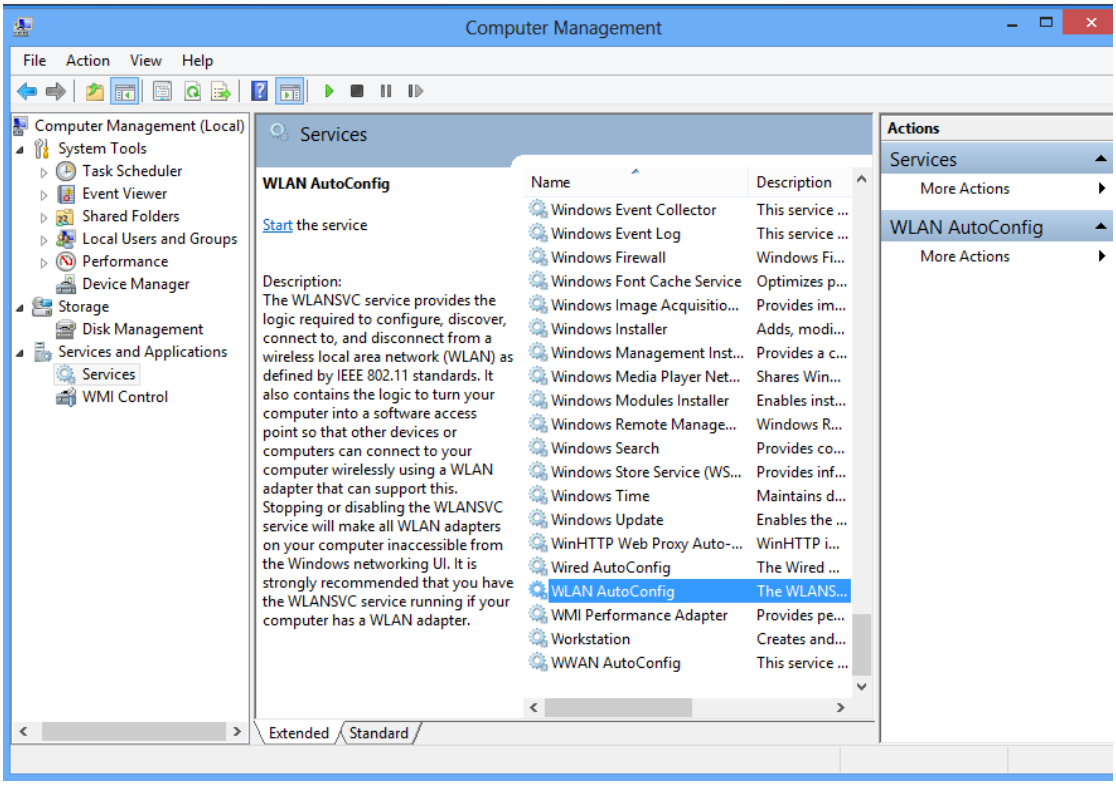
Step1. From your desktop, right-click My Computer and select Manage.

Step2. Select Services and Applications -> Services.

Step3. Double-click Wireless Zero Configuration/ WLAN AutoConfig and then click Start on the appearing window or right click Wireless Zero Configuration/ WLAN AutoConfig and select Start from the pop-up list.



Enable WZC in Windows XP



Enable WLAN AutoConfig in Windows7

Q2: I followed instructions to install the driver but failed.

This can occur if you have already installed other manufacturer's adapter. Drivers of other manufacturer might cause a conflict with the new driver. Please first uninstall it and then check to make sure that oem.inf file is removed from C:\WINDOWS\inf.

Appendix 4 Safety and Emission Statement

CE Mark Warning

This is a Class B product In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures. This device complies with EU 1999/5/EC.

NOTE:(1)The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment.(2) To avoid unnecessary radiation interference, it is recommended to use a shielded RJ45 cable

FCC Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment.

Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

NOTE:(1)The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment.(2) To avoid unnecessary radiation interference, it is recommended to use a shielded RJ45 cable

NCC Notice

經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更設計之特性及功能。

低功率射頻電機之作用不得影響飛航安全及幹擾合法通信；經發現有幹擾現象時，應立即停用，並改善至無幹擾時方得繼續使用。前項合法通信，指依電信規定作業之無線電信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之幹擾。